

Repair Manual



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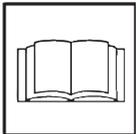
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1. INTRODUCTION

This manual describes the instructions for Repairing SKH Series pumps, and must be carefully read and understood before performing any repair intervention on the pump. {proper pump operation and longevity depend on the correct use and maintenance. General Pump declines any responsibility for damage caused by the misuse or the non-observance of the instructions described in this manual.

1.1 Description of Symbols

Read the contents of this manual carefully before each operation.



Read the contents of this manual carefully before operation



Danger Sign
Wear eye protection

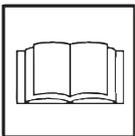


Danger Sign
Put on protective gloves before operation



Warning Sign

2. REPAIR INSTRUCTIONS



2.1 Repairing Mechanical Parts

Mechanical parts repair must be performed after removal of oil from the casing. To drain the oil, remove the oil dipstick, (1, fig. 1) and then the draining plug (2, fig. 1).

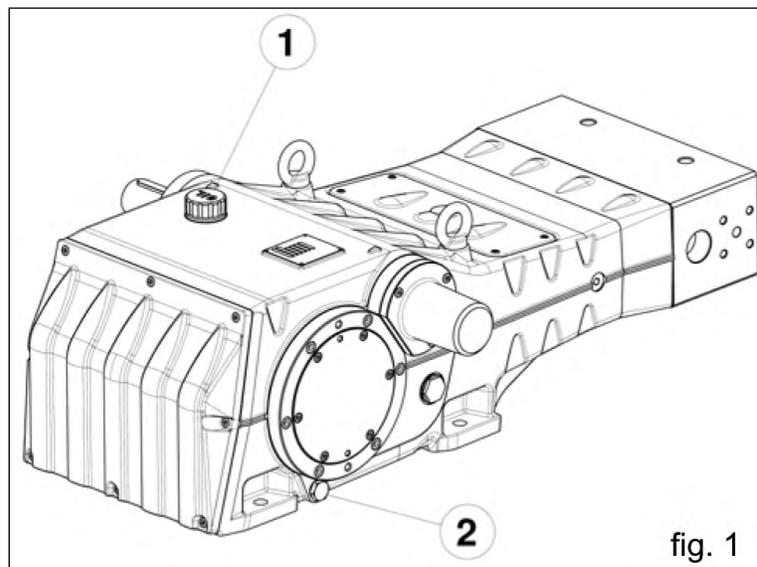


fig. 1



The oil must be placed in a suitable container and disposed of in special centers. It absolutely must not be discarded into the environment.

2.1.1 Disassembly of Mechanical Parts

The correct sequence is the following:

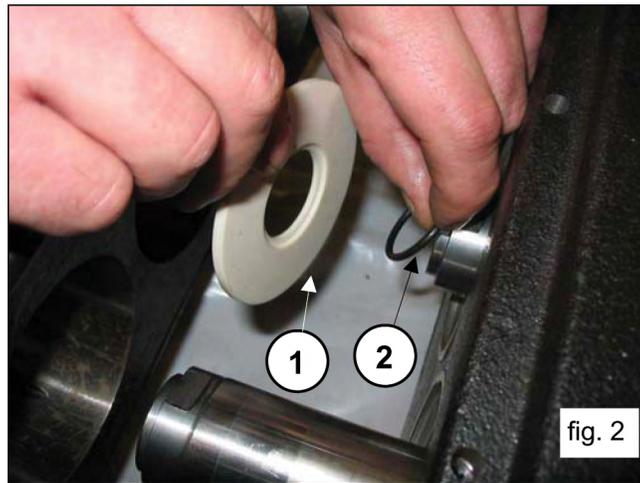
Completely empty the pump of oil, as indicated in 2.1.

Separate the head and the spacer for liners from the pump casing as shown in 2.2.1 (from fig. 106 to 109).

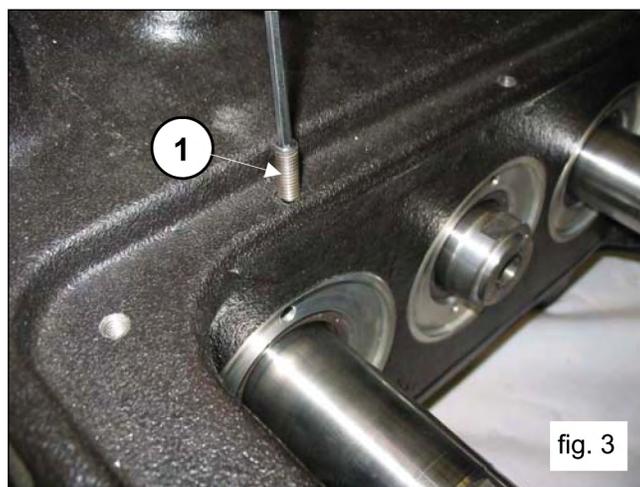
Remove the upper inspection cover and the lower inspection cover by unscrewing the 4 attachment screws, as shown in point 2.2.3 (fig. 120 and fig. 121). Slip off the O-rings and replace them in necessary.

Remove the three plungers with an open-ended wrench, as shown in 2.2.3 (fig. 122).

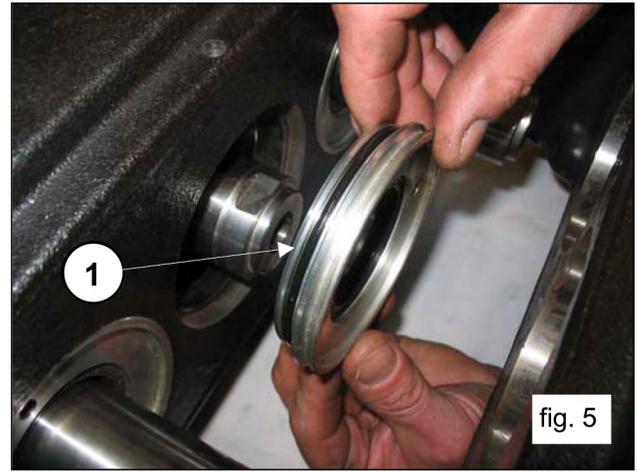
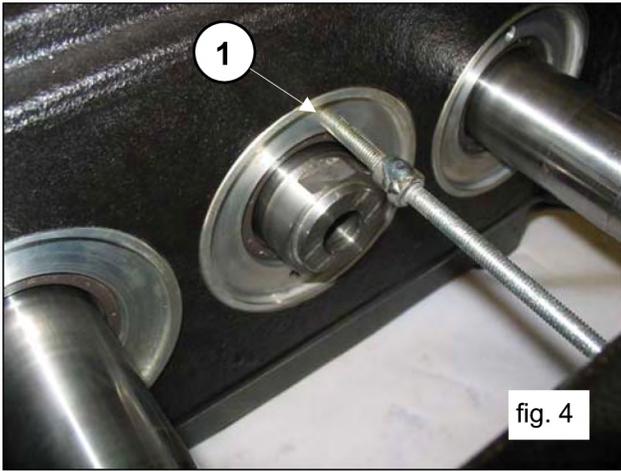
Remove the three spray guards, complete with O-rings (1 and 2, fig. 2).



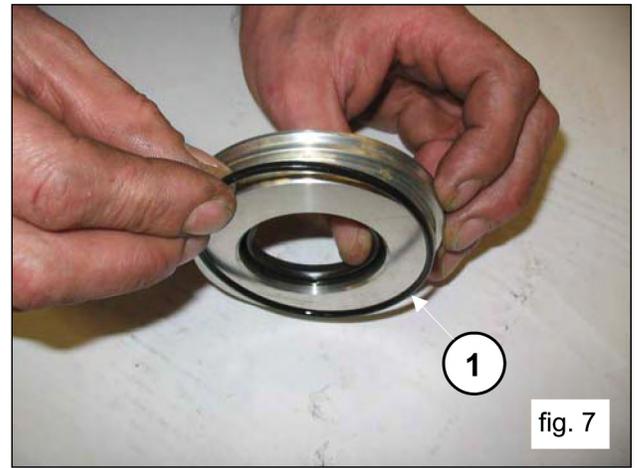
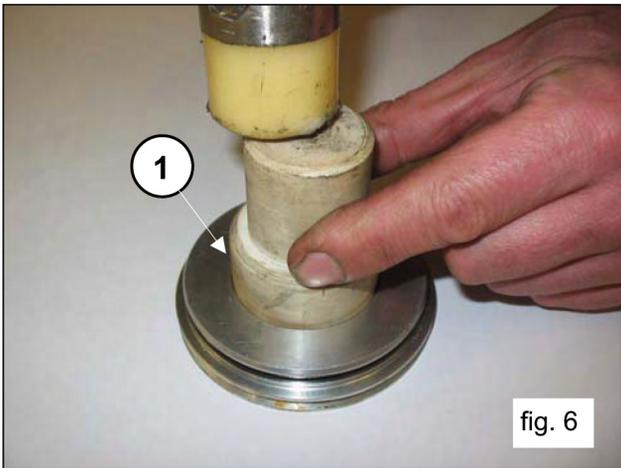
Unscrew the M6 locking grub screws from the three oil seal covers (1, fig. 3).



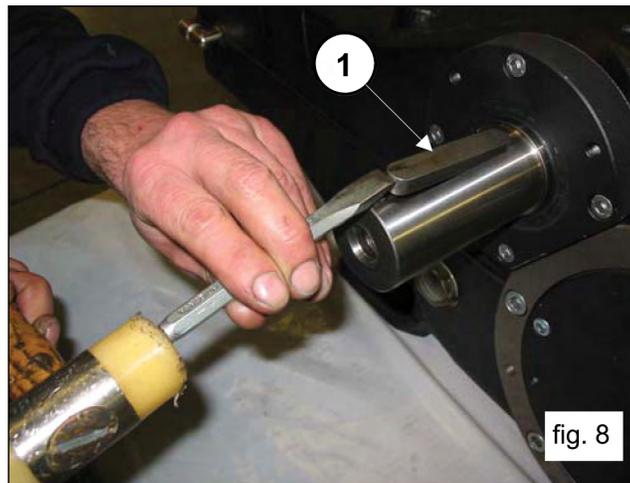
Take out the oil seal covers by screwing a threaded bar or an extractor M6 screw in the holes in the cover (1, fig. 4) and take out the covers from the pump group (1, fig. 5).



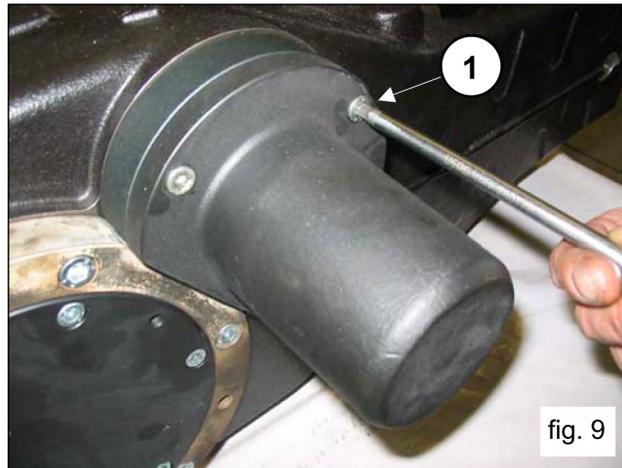
Take out the radial seal ring (1, fig. 6) and the outside O-ring (1, fig. 7).



Remove the lug from the PTO shaft (1, fig. 8).



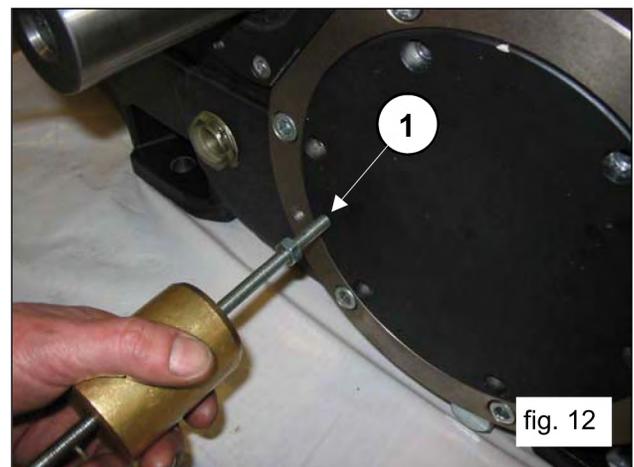
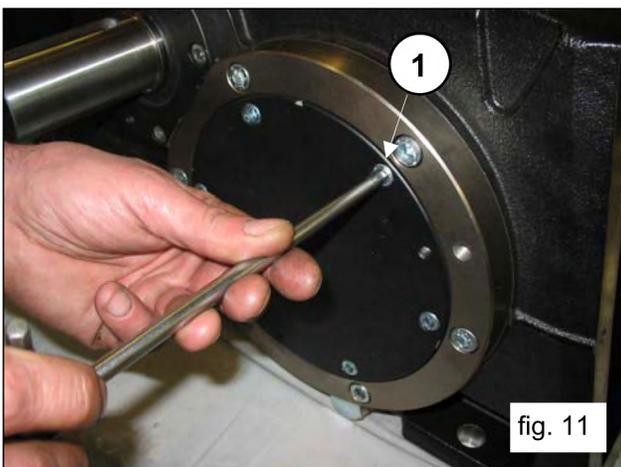
Unscrew the attachment screws of the shaft end cover (1, fig. 9) and slip the cover off the PTO shaft



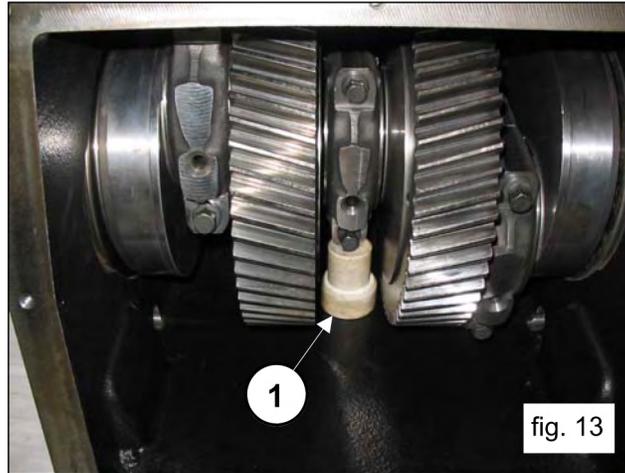
Unscrew the casing cover attachment screws (1, fig. 10) and remove it. Slip off the O-ring and replace if needed.



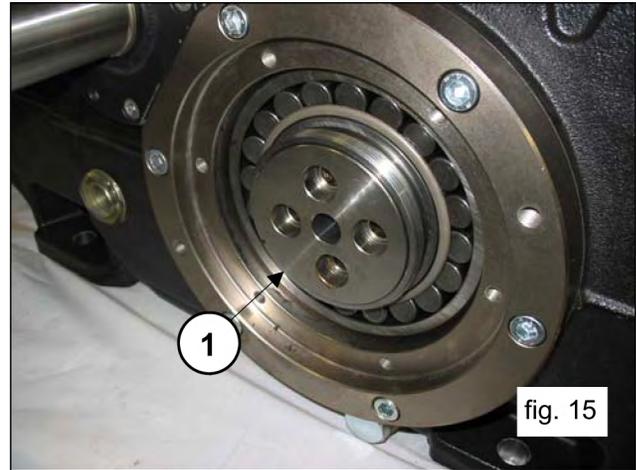
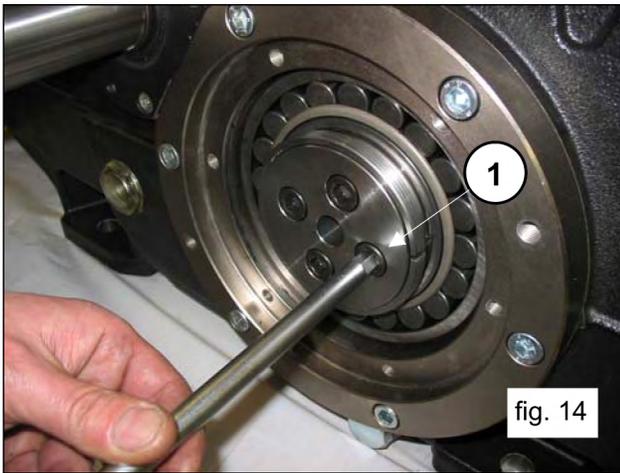
Now remove the two bearing covers by unscrewing the screws (1, fig. 11). To help with their removal, use 2 M8 grub screws (1, fig. 12) as extractors. Slip off the O-ring and replace if necessary.



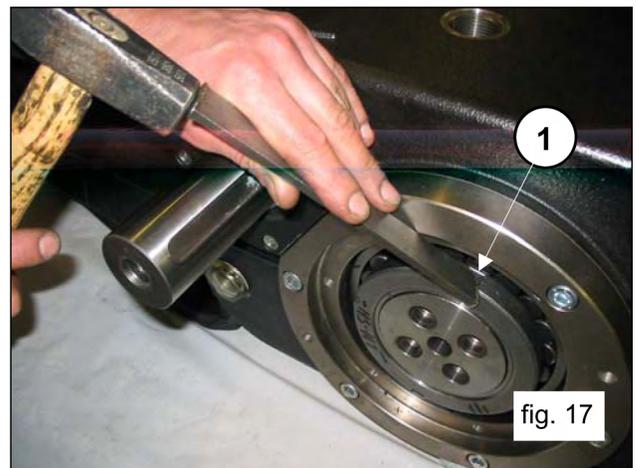
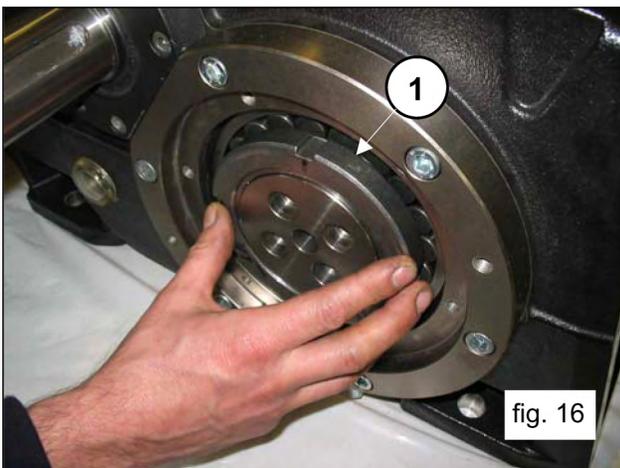
Insert a shim under the shank of the central connecting rod, to stop the rotation of the crankshaft (1, fig. 13).



Unscrew and take out the bush locking flange attachment screws, from both sides (1, fig. 14). The bush locking flanges must be left in position (1, fig. 15).



On one side, screw a ferrule (type SKF KM20) onto the pressure bushing (1, fig. 16) and then unblock the bushing using a striking hammer (1, fig. 17) but do not remove it. Repeat the operation on the other side.



Remove the shim from under the shank of the central connecting rod. Unscrew the connecting rod screws (1, fig. 18).

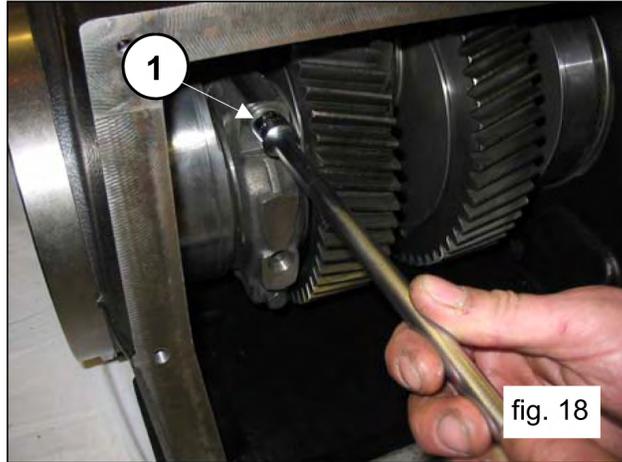


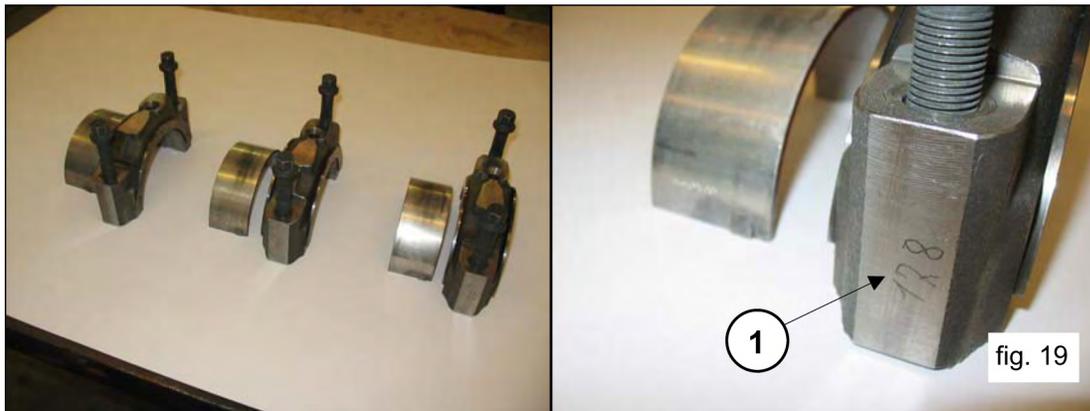
fig. 18

Dismantle the small ends of the connecting rods with the half-bearings. During this operation take particular care to not the order in which the parts are removed.



The connecting rod small ends and the big end halves must be reassembled in exactly the same order and pairings in which they were dismantled.

To prevent any errors, small ends and big end halves are numbered on one side (1, fig. 19).



Advance the three big end halves as far as possible in the direction of the head. Slip off the three upper half-bearings of the big end halves (1, fig. 20).

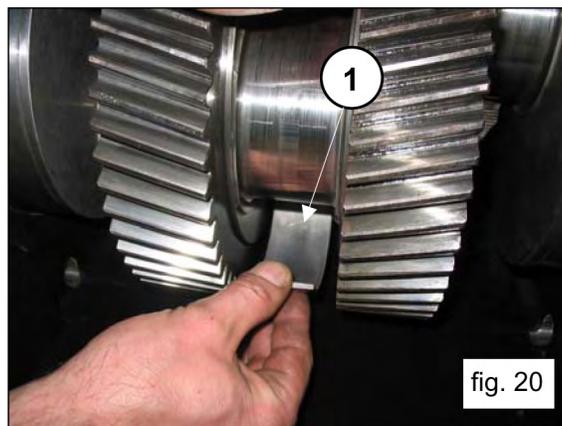
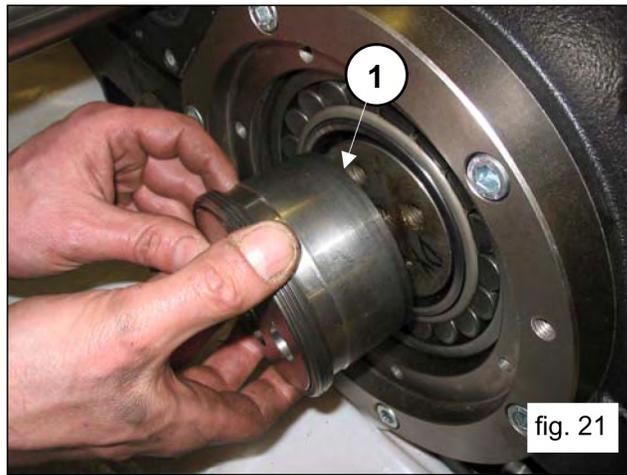
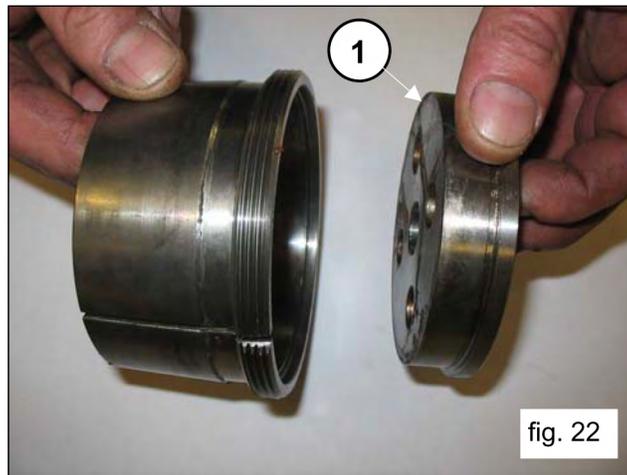


fig. 20

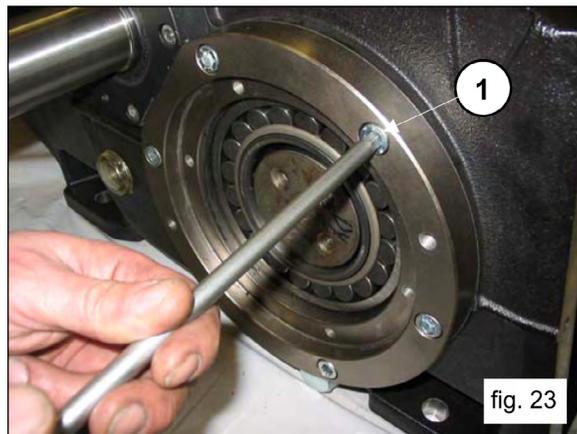
Take out both of the pressure bushing (1, fig. 21).



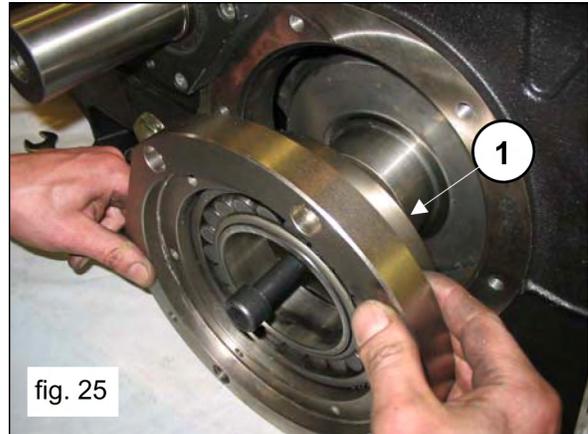
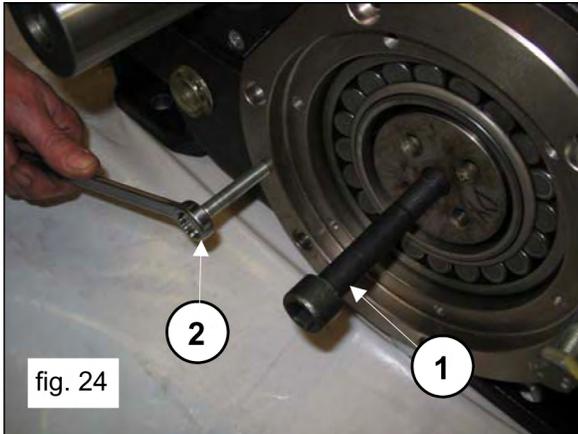
Separate the bushing locking flange from the pressure bushing (1, fig. 22).



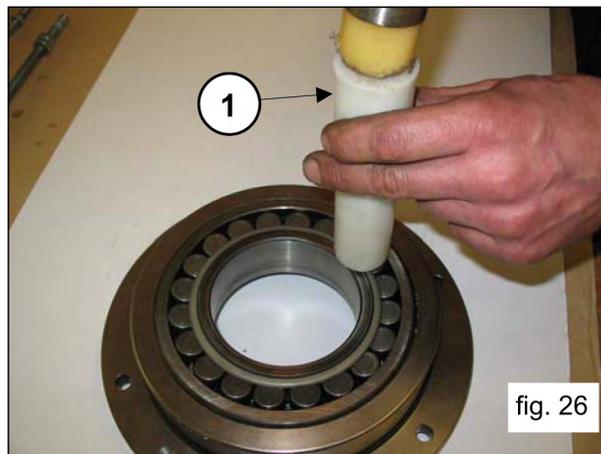
Unscrew the screws of the two bearing support covers (1, fig. 23).



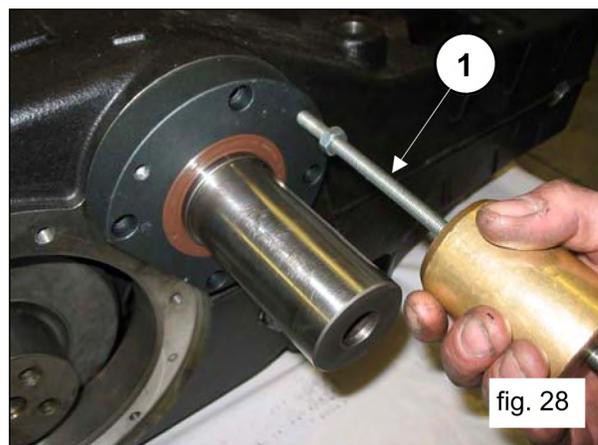
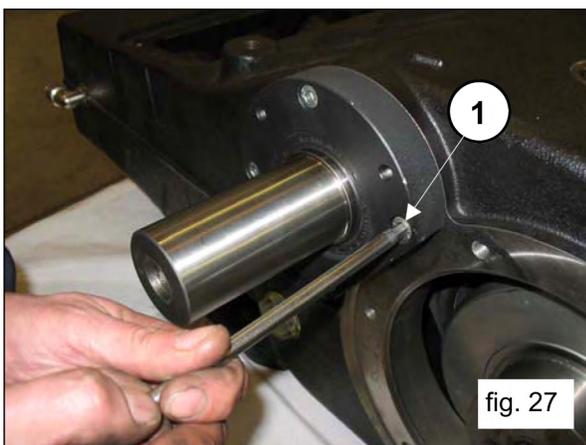
Apply an M16 threaded pin to one end of the crankshaft (1, fig. 24) and, while keeping it raised, take out the bearing support cover complete with bearing and O-ring (1, fig. 25). To help with their removal, use 2 M10 grub screws (2, fig. 24) as extractors. Repeat the operation on the other side.



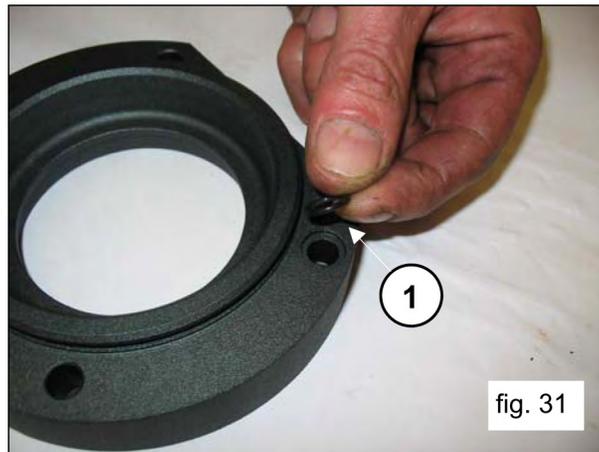
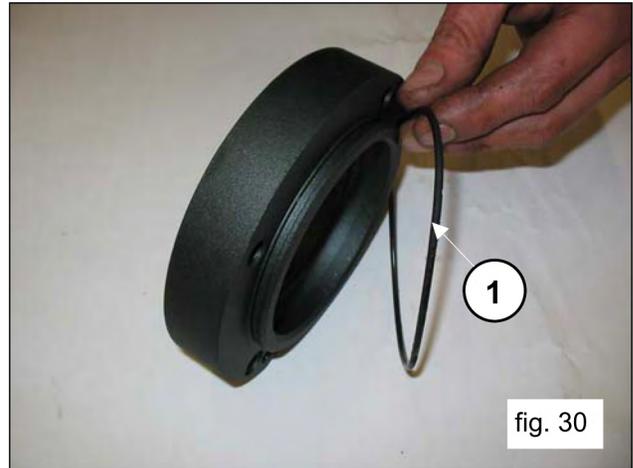
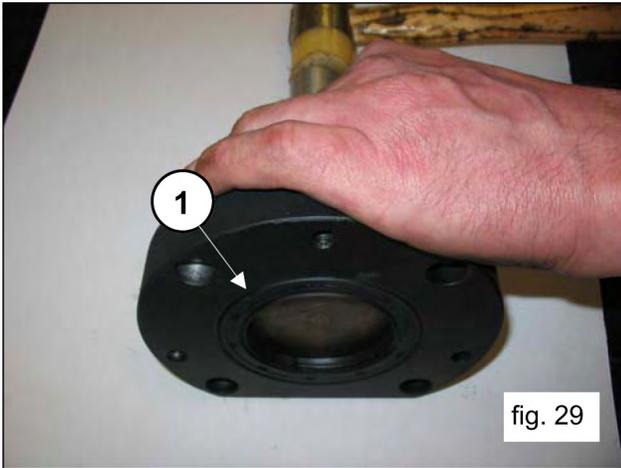
Lay the crankshaft on the bottom of the casing. Separate the bearing support cover from the bearing, using a striking hammer (1, fig. 26).



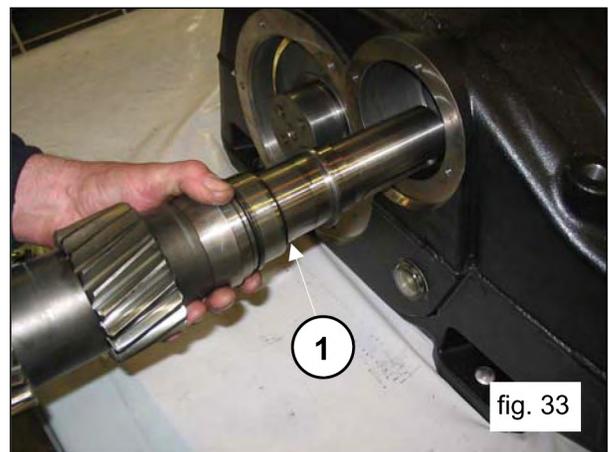
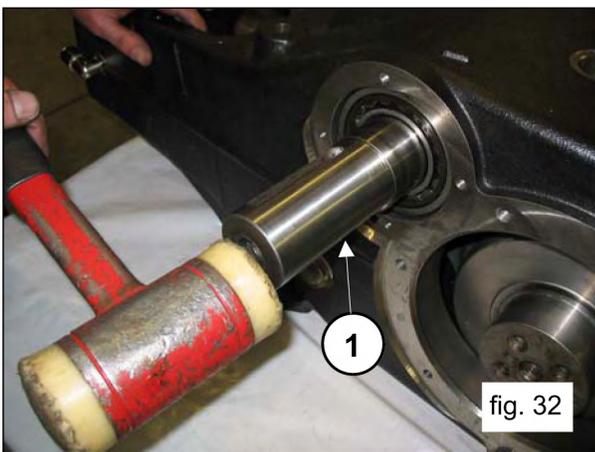
Unscrew the attachment screws of the left and right PTO bearing cover (1, fig. 27) and slip the two covers off the PTO shaft. To help with their removal, use 3 M8 grub screws or screws (1, fig. 28) as extractors.



Take out the radial seal ring (1, fig. 29) and the outside O-ring and the lubrication hole O-ring (1, fig. 31).



Roll back the three connecting rods as far as possible (until they touch the crankshaft). Using a striking hammer or mallet (1, fig. 32), take out the PTO crankshaft from either one of the two sides (1, fig. 33).



Slip the internal bearing rings off the PTO shaft (1, fig. 34) and also slip off the two internal bearing spacers (2, fig. 34).

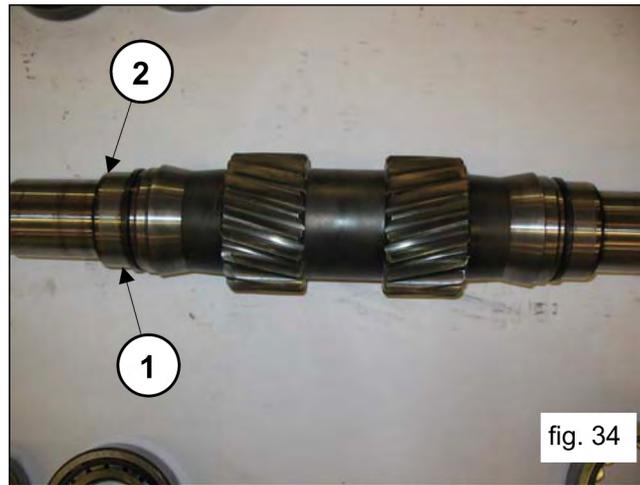


fig. 34



The internal and external bearing rings must be reassembled in exactly the same order and pairings in which they were dismantled.

Using a sufficiently long bar (1, fig. 35) and a striking hammer, take the bearing rings out of the pump casing (1, fig. 36), along with the external bearing spacer (1, fig. 37) and the bearing lubrication bushing (1 fig. 38).

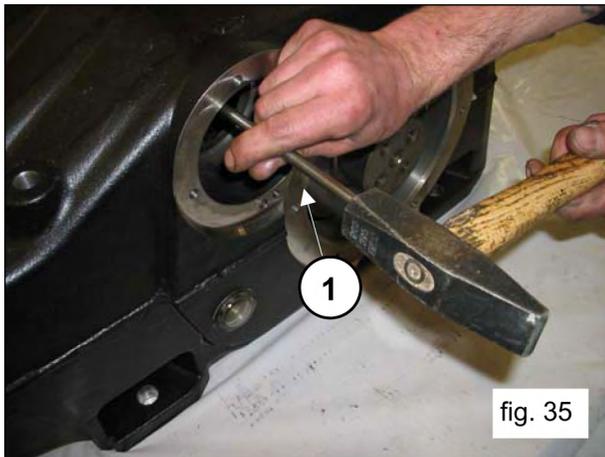


fig. 35

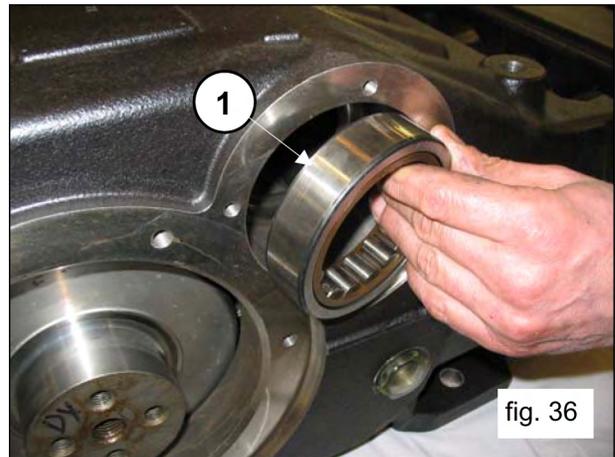


fig. 36

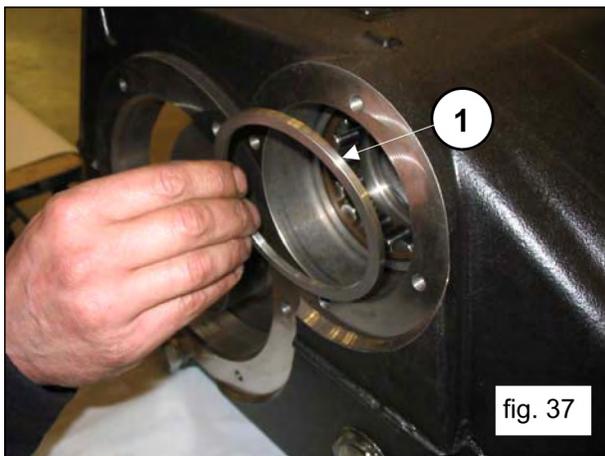


fig. 37

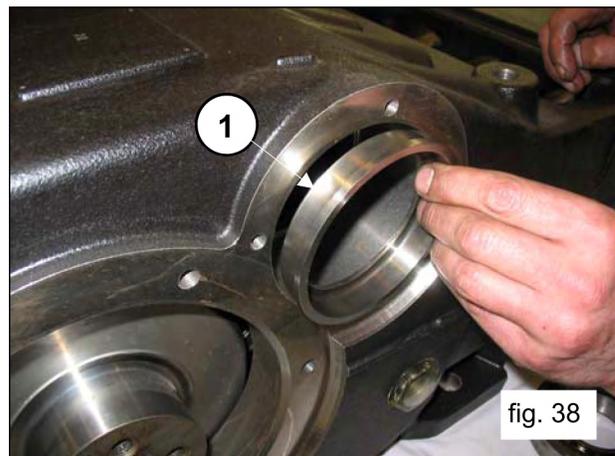
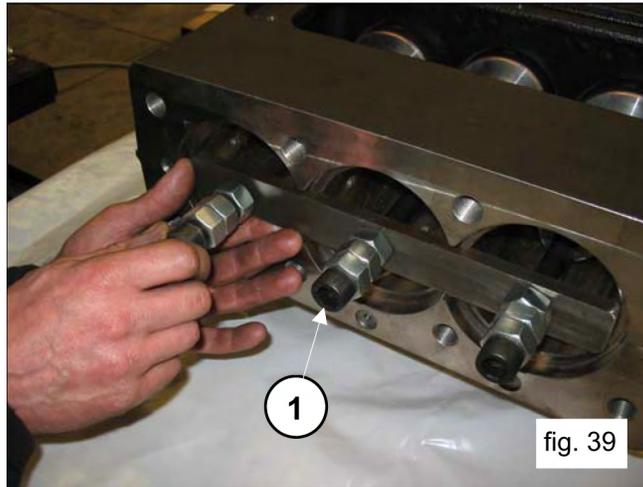
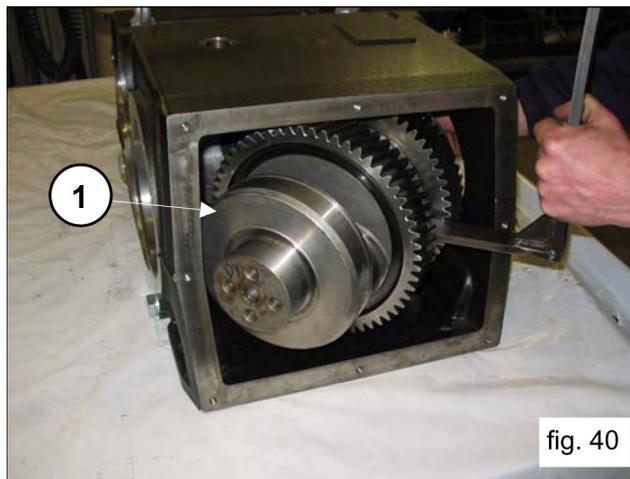


fig. 38

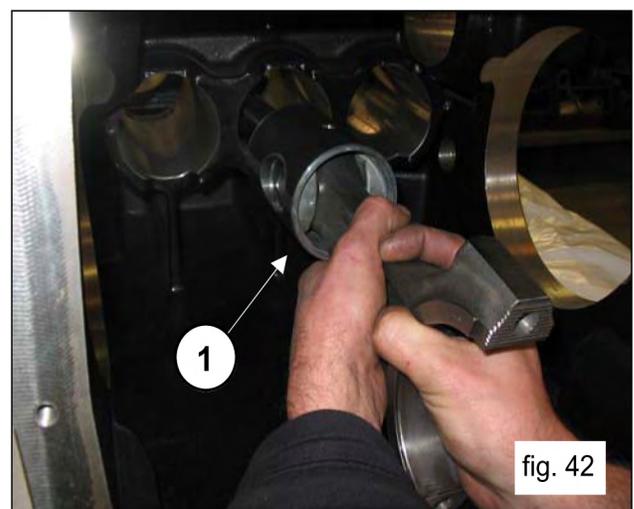
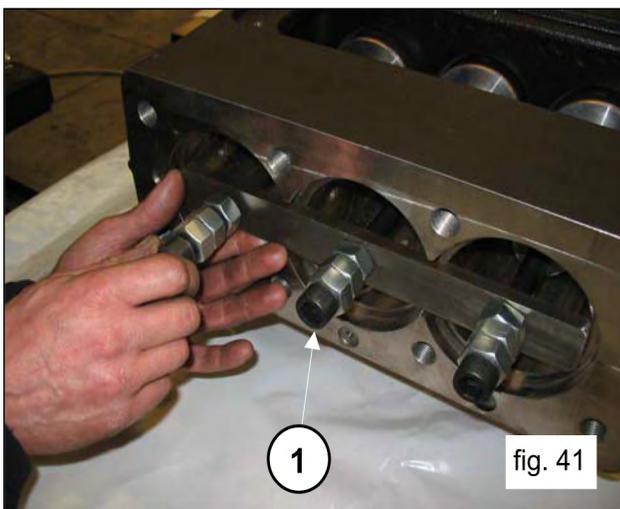
Advance the big end halves in the direction of the hydraulic part and lock them in place using the special tool (part #F27566200) (1, fig. 39).



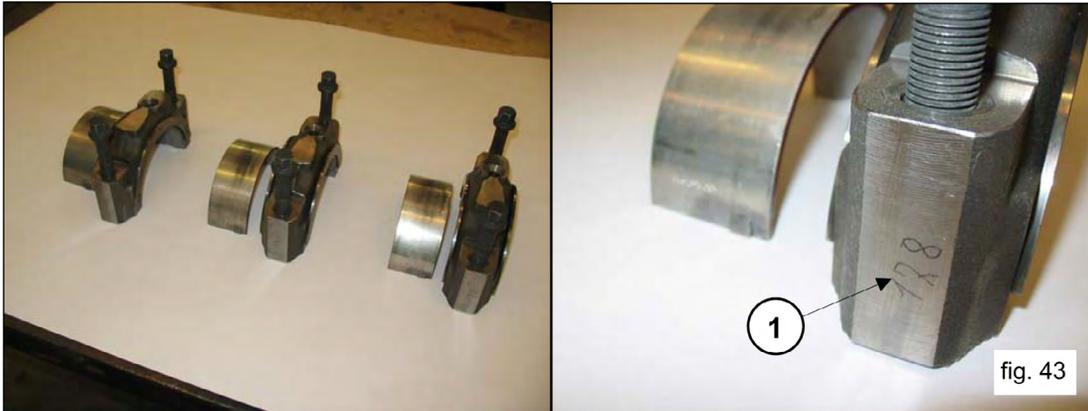
Move the crankshaft from the lower part of the casing (1, fig. 40).



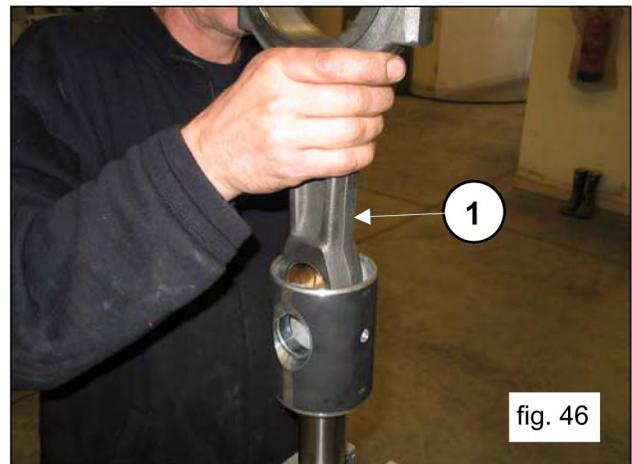
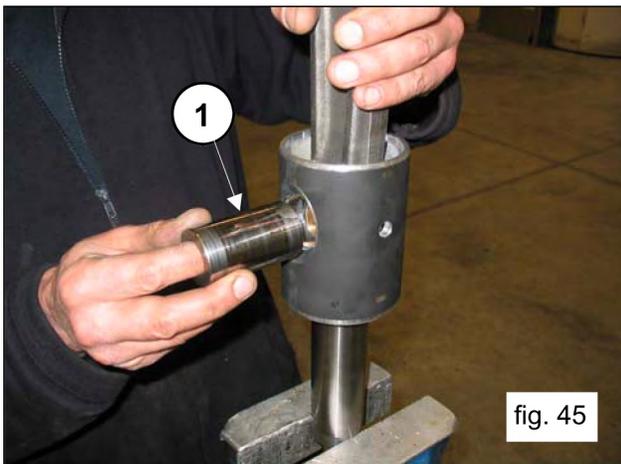
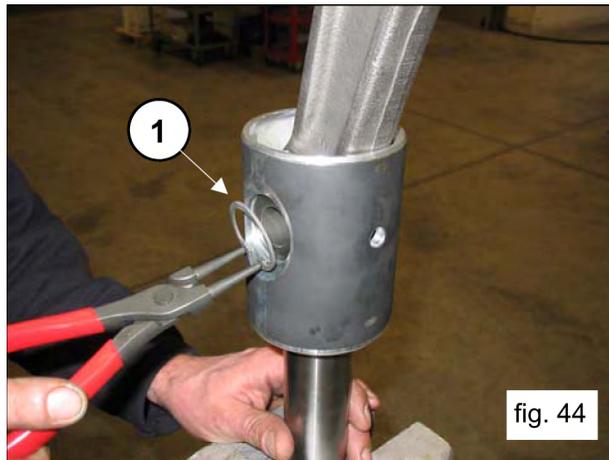
Proceed to unscrew the screws of the tool (#F27566200) to unlock the connecting rods (1, fig. 41) and then take out the connecting rod/piston head assemblies from the rear opening of the casing (1, fig. 42).



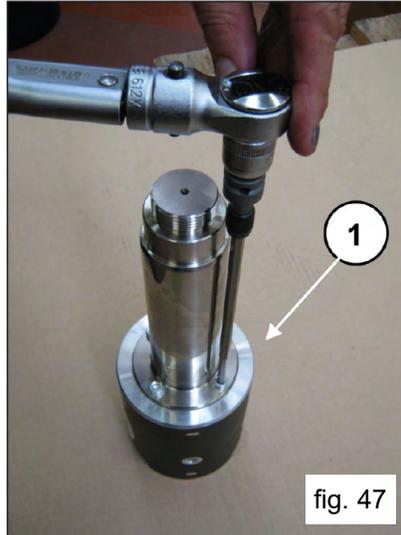
Couple the big end halves to the small ends that were previously dismantled, with reference to their numbering scheme (1, fig. 43).



Remove the two pin-locking Seeger rings using the correct tool (1, fig. 44).



To separate the rod from the piston guide, unscrew the round head M6 screws with a socket wrench (1, fig. 47).

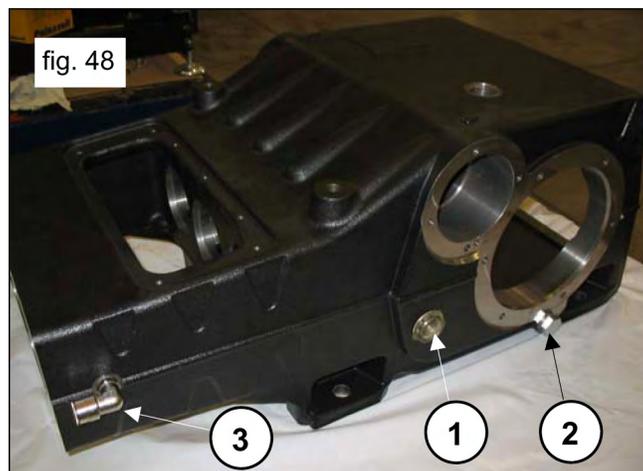


Complete the disassembly of the mechanical part by removing the oil level lights, the eye bolts and the 90° quick-fit connection.

2.1.2 Assembly of Mechanical Parts

Proceed with assembly following the reverse order indicated in point 2.1.1. The proper sequence is as follows:

Attach the two oil level lights, the two oil drain plugs and the 90° quick-fit connection (1, 2 and 3, fig. 48).

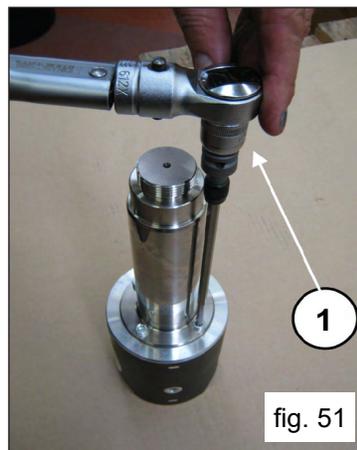


Connect the stem to the piston head.

Insert the piston guide rod into its seat on the piston guide (1, fig. 49) and connect the stem to the piston head using 4 M6x20 screw (1, fig. 50).



Place the stem in a vice, closing the teeth of the vice on the two flat areas, and proceed with setting, using a torque wrench (1, fig. 51) as shown in section 3.



Insert the connecting rod into the plunger head (1, fig. 46) and then insert the pin (1, fig. 45). Apply the two shoulder Seeger rings using the correct tool (1, fig. 44).

Separate the small ends from the big end halves. Correct pairing is ensured by the numbering on one side (1, fig. 43).

After verifying that the casing is perfectly clean, insert the big end half/piston head assembly into the cylinder tube in the casing (1, fig 42).

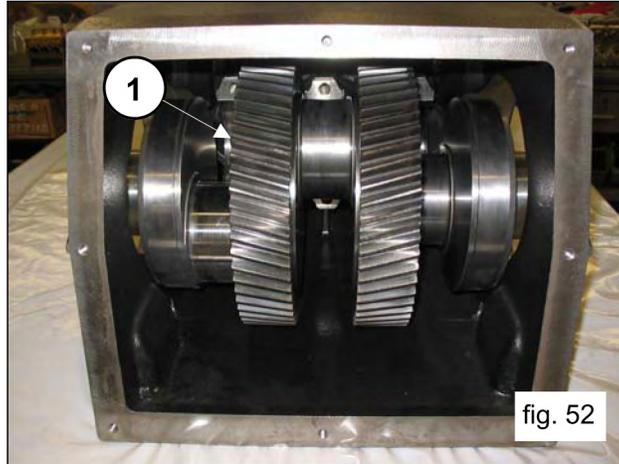


The big end half/piston head assembly must be inserted into the housing with the numbering of the big end halves visible from above.

Lock the three assemblies using the special device (part #F27566200) (1, fig. 41). Insert the crankshaft through the rear opening of the casing and lay it on the bottom.

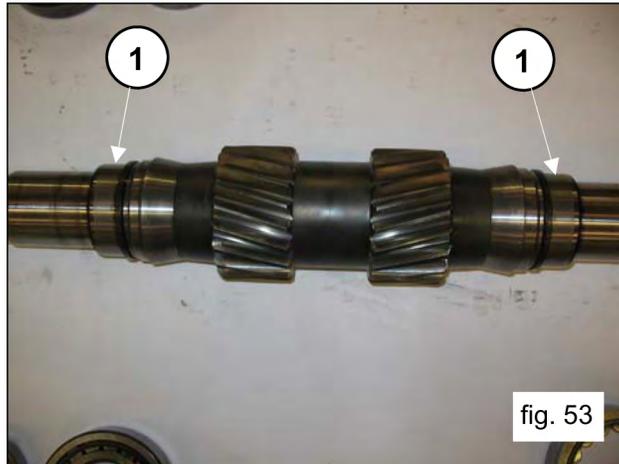


The crankshaft must be inserted into the casing so that the teeth on the ring bevel gears are oriented as shown in fig. 52



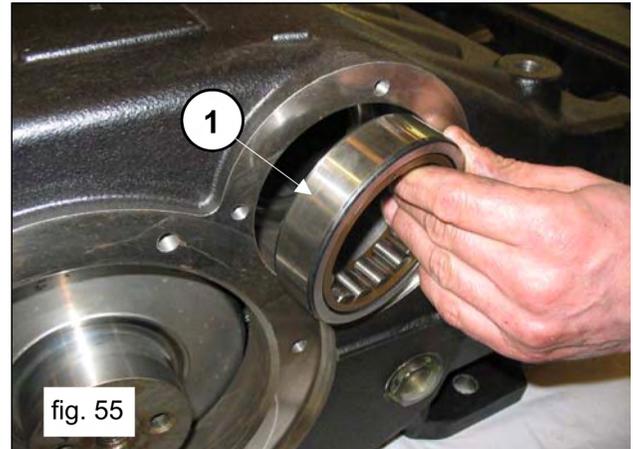
Pre-assemble the PTO shaft.

Onto the PTO shaft, slip on the 2 internal rings of the bearings (one per side) (1, fig. 53).



The internal and external bearing rings must be reassembled in exactly the same order and pairings in which they were dismantled.

From one side of the casing, insert the bearing lubrication (1, fig. 54) and an external bearing ring (1, fig. 55) using a pad and a mallet or striking hammer).



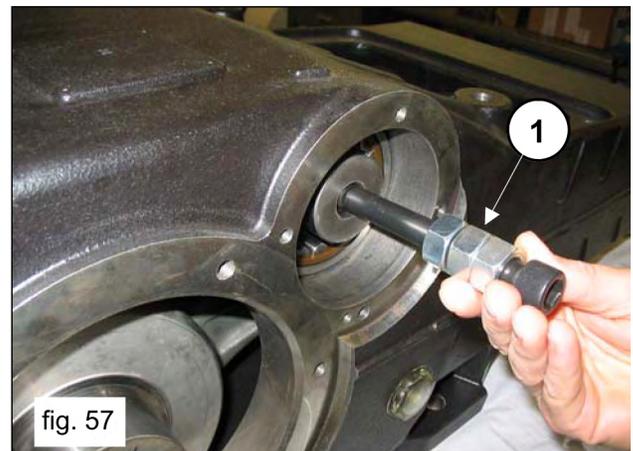
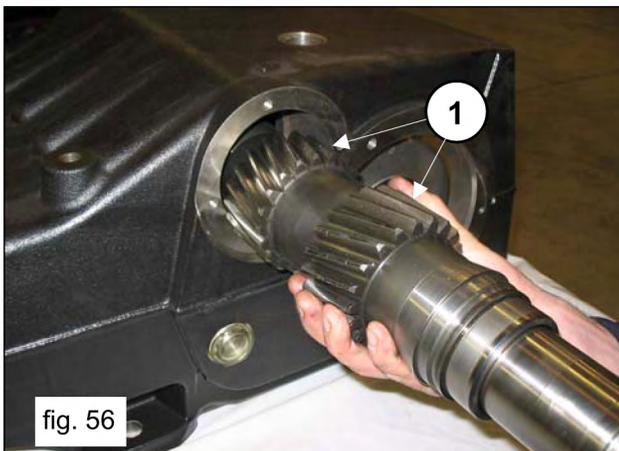
Remove the device for locking the connecting rods (part #F27566200) (1, fig. 41) and roll back the connecting rods until they touch the crankshaft

Insert the preassembled PTO shaft into the casing (1, fig. 56). Insert it from the other side to the side where the external bearing ring and the bearing lubrication bushing were inserted.

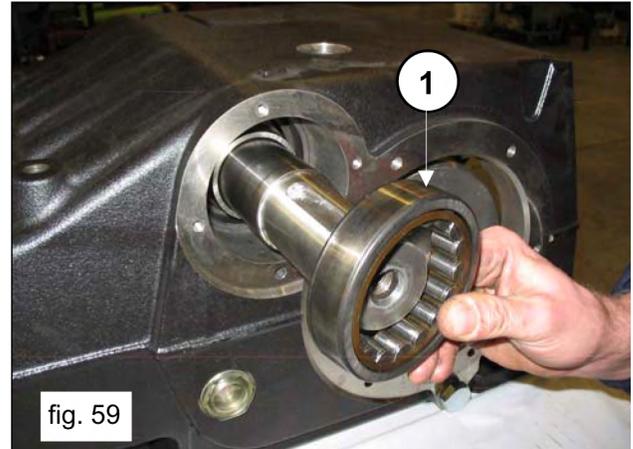


The PTO shaft must be inserted into the casing so that the teeth are oriented as shown in fig. 56.

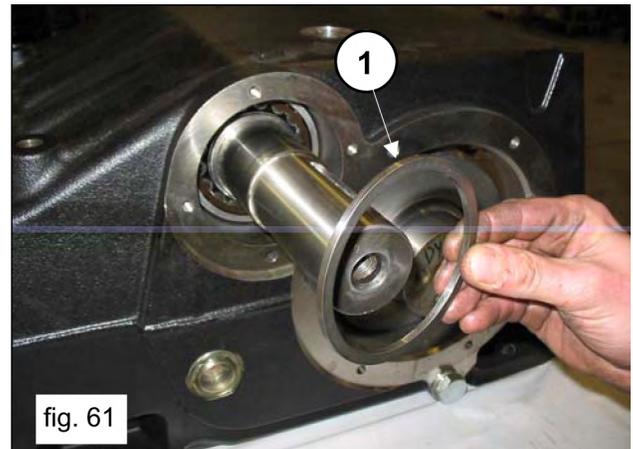
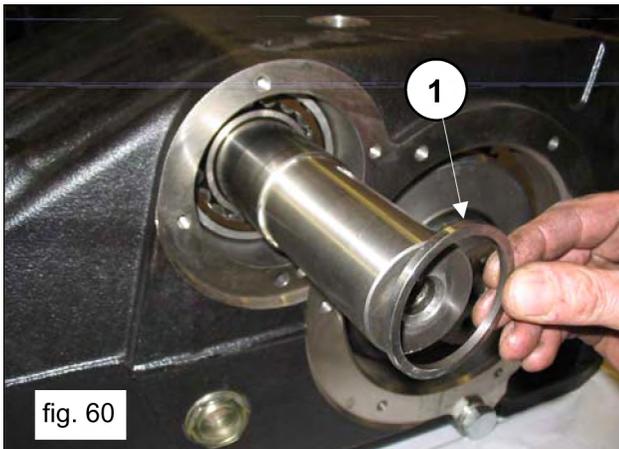
It is easier to insert the PTO shaft completely inside the bearing by applying the M16 screw to the end of the shaft being inserted, to keep the shaft lifted up (1, fig. 57).



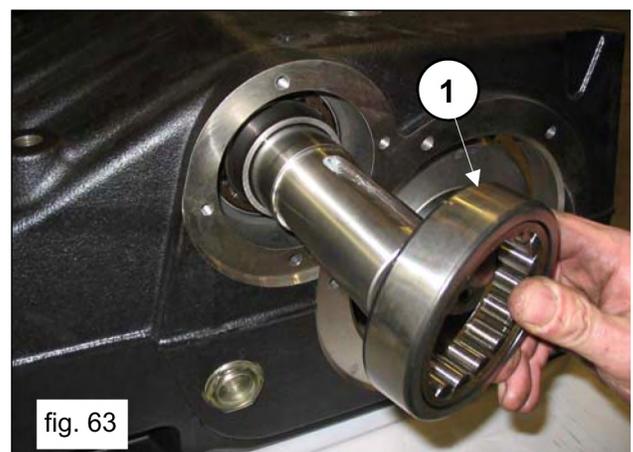
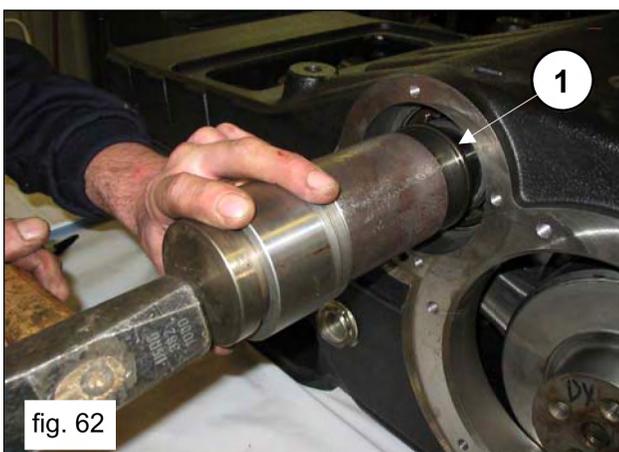
From the side of the casing where the PTO shaft was inserted, proceed to insert the bearing lubrication bushing (1, fig. 58) and an external bearing ring (1, fig. 59) using a pad and a mallet or striking hammer.



At both sides, insert the internal bearing spacers (1, fig. 60) and the external bearing spacers (1, fig. 61).



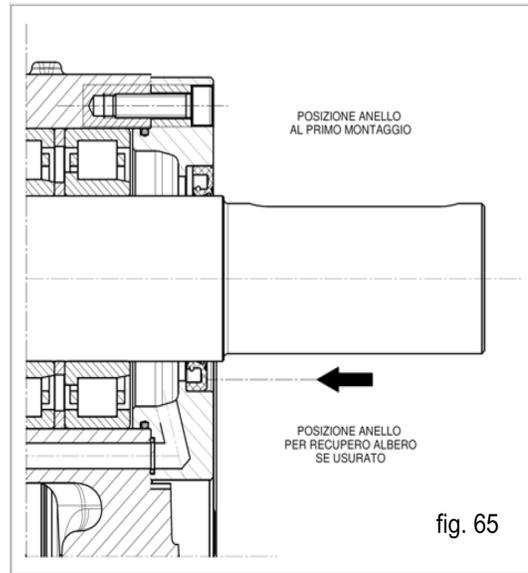
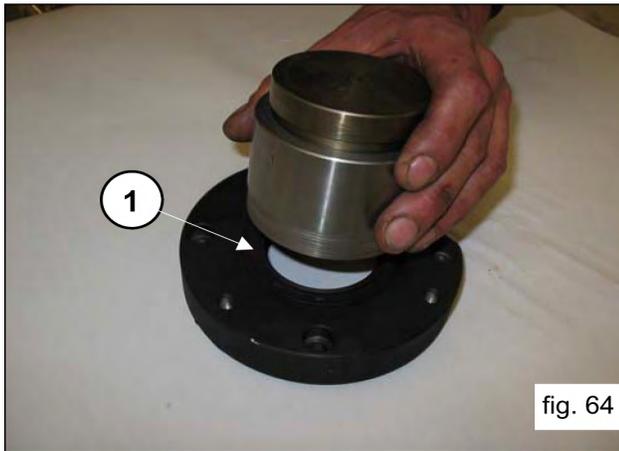
Insert the internal ring (1, fig. 62) and external ring (1, fig. 63) of a bearing from one side of the pump only.



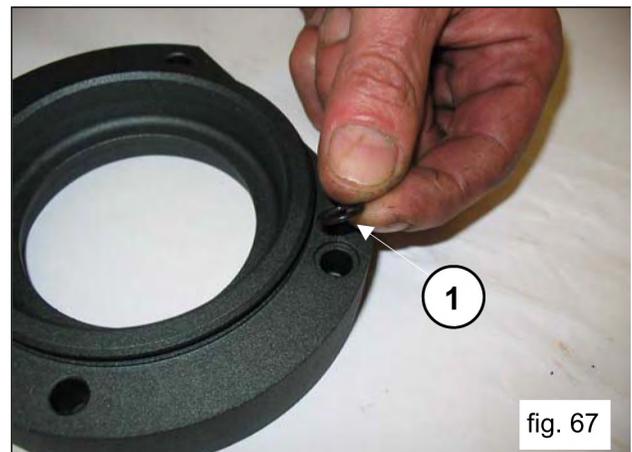
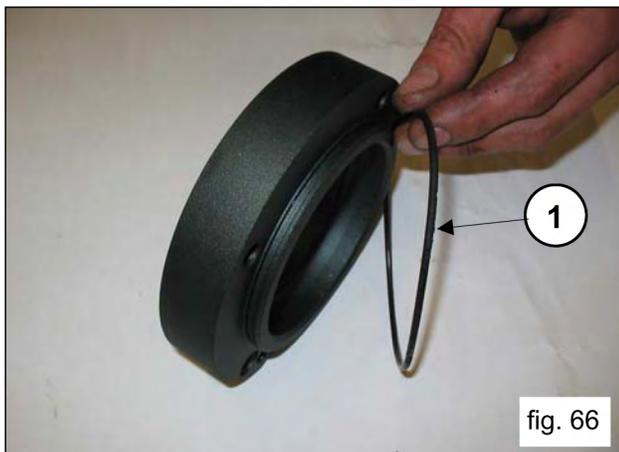
Pre-assemble the left and right PTO bearing covers:
Insert the radial seal ring into the PTO bearing cover using the device (part #F27539500) (1, fig. 64).
Before proceeding with the assembly of the radial seal ring, verify the condition of the seal lip. If it is necessary to replace it, position the new ring as shown in fig 65).



If the PTO shaft shows diameter wear corresponding to the seal lip, then to avoid grinding you can position the ring as a second step as shown in fig. 65.



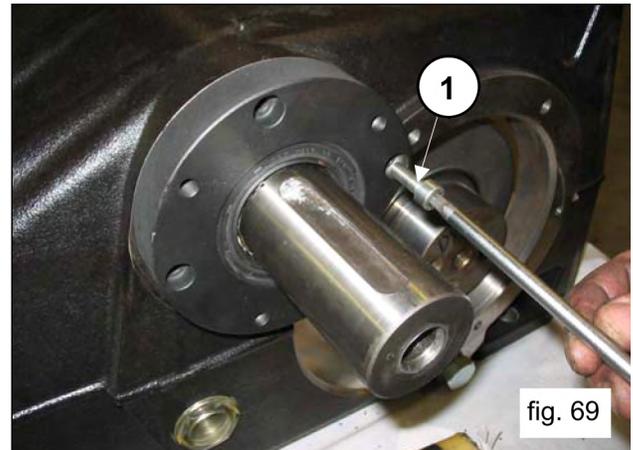
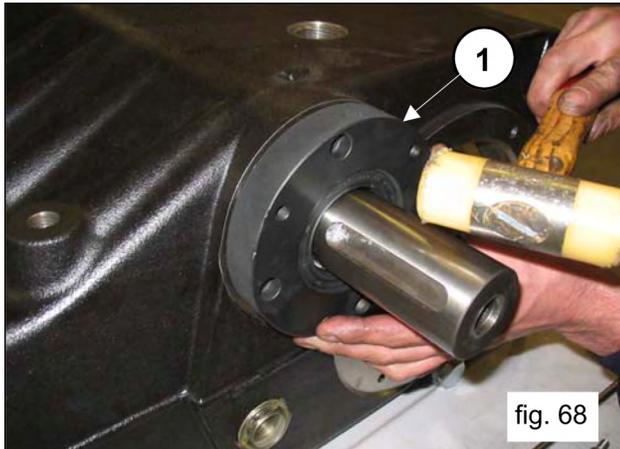
Apply the external O-ring (1, fig. 66) and the lubrication hole O-ring (1, fig. 67) to the PTO bearing covers.



Mount one of the PTO bearing covers (left or right) on the pump casing (1, fig. 68) and attach it with 4 M8 x 30 screws (1, fig. 69).



Be careful of the direction of assembly of the cover. The lubrication hole in the cover must correspond to the hole in the casing.



Repeat the operations on the other side:

Insert the internal ring (1, fig. 62) and external ring (1, fig. 63) of the second bearing.

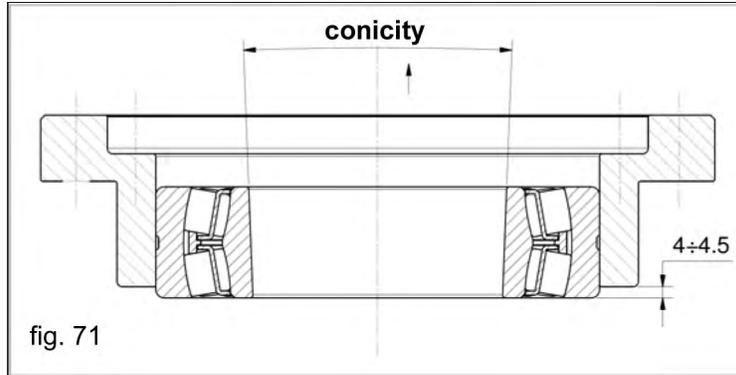
Mount the second PTO bearing cover on the pump casing (1, fig. 68) and attach it with 4 M8 x 30 screws (1, fig. 69).

Set the 4 screws with a torque wrench, as shown in Section 3.

Pre-assemble the two bearing support covers:

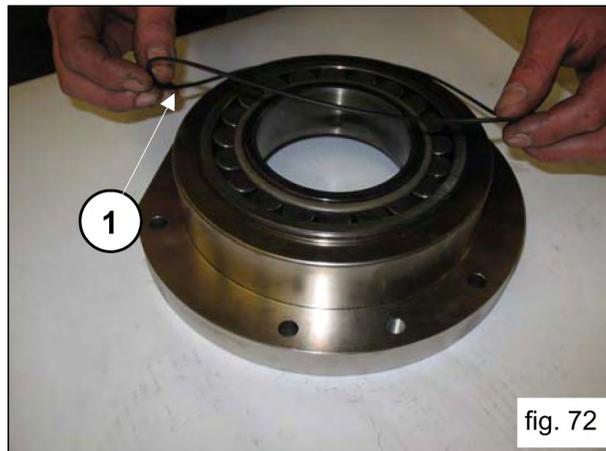
Insert the bearing using a mallet or striking hammer (1, fig. 70) until 4-4.5 mm of the bearing is still protruding, as shown in fig 71.





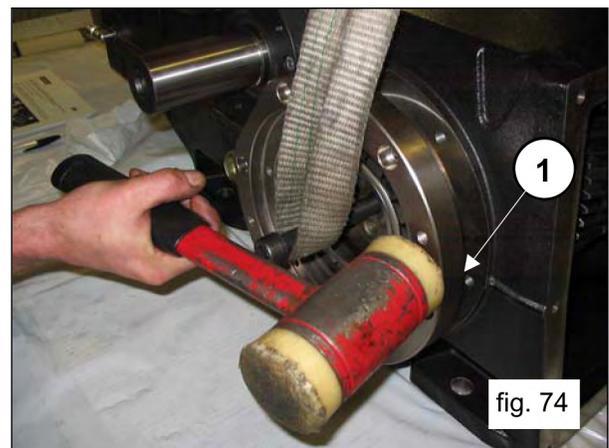
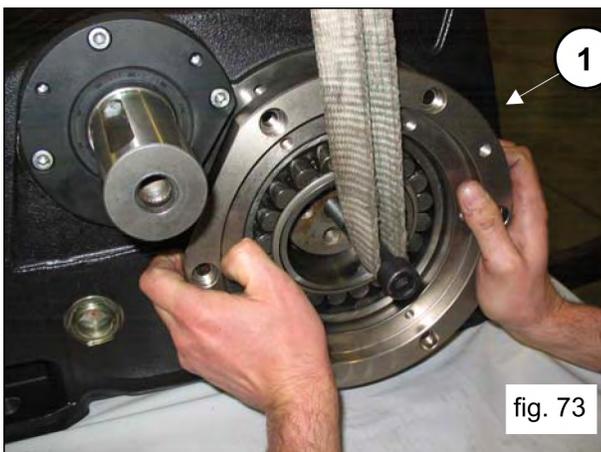
The bearing in fig. 71 has a tapered internal ring. Verify that the taper is from the outside to the inside, to allow the subsequent insertion of the bushing.

Apply the O-ring to the outside of the bearing support cover (1, fig. 72).

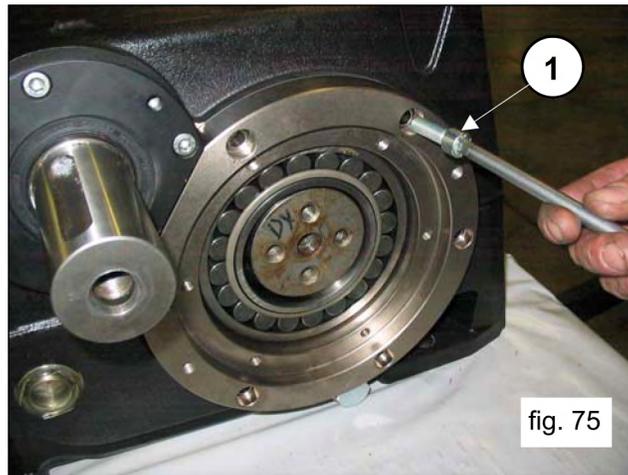


Repeat the operation with the other cover.

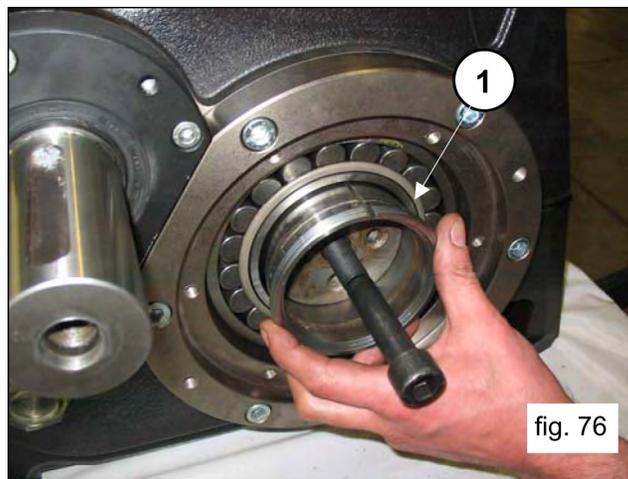
Lock the three connecting rod assemblies, using the special device (part #F27566200) (1, fig. 41). Apply two M16 threaded pins to the end of the crankshaft and, while keeping it raised (1, fig. 73), insert the bearing support cover complete with bearing and O-ring (1, fig. 74) using a mallet or striking hammer. Repeat the operation on the other side.



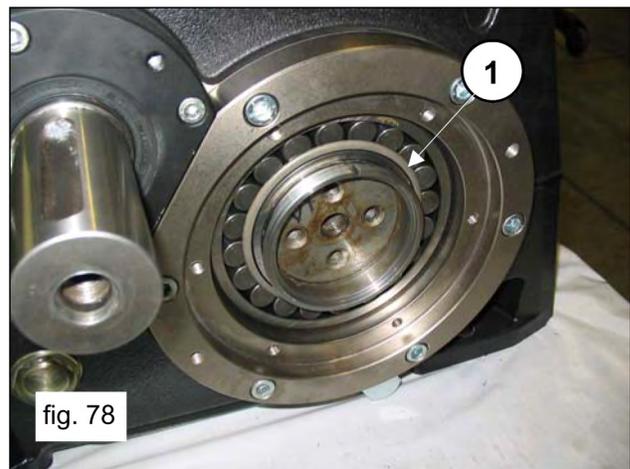
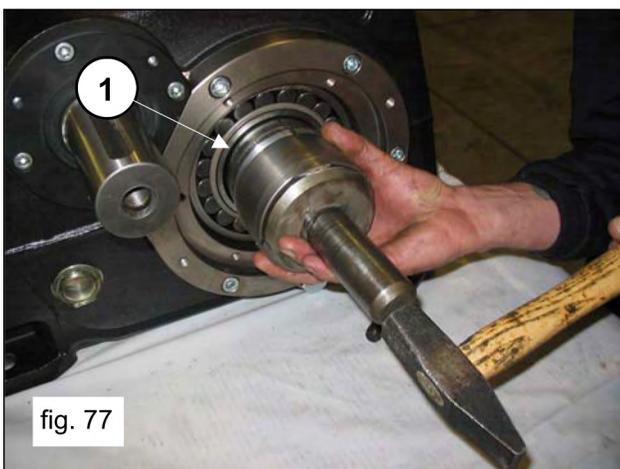
Fasten the bearing support covers with 6 M10 X 30 screws (1, fig. 75).
Set the screws with a torque wrench, as shown in Section 3.



Partially insert the two pressure bushings, keeping the crankshaft lifted up by means of the previously mounted M16 pin (1, fig. 76).



Insert the pressure bushing completely onto the crankshaft (1, fig. 77 and fig. 78) using a mallet/striking hammer and a pad.





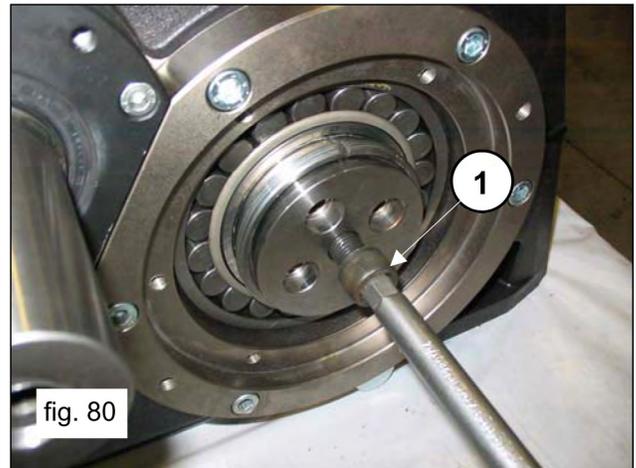
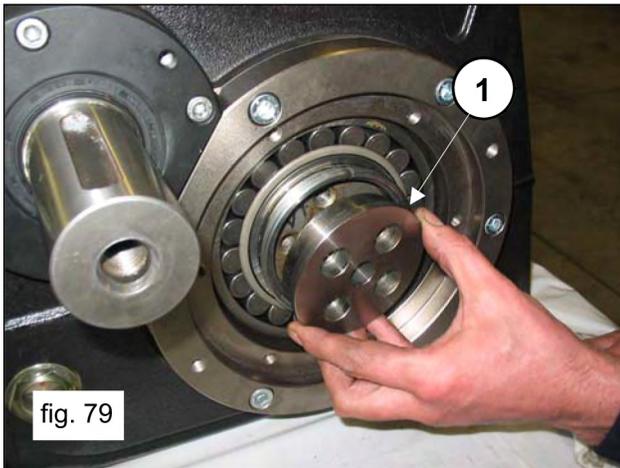
The pressure bushing must be inserted dry (no oils or lubricants).

Insert the bushing until the outside (conical) surface perfectly couples with the inside of the bearing. During insertion, make sure that the bearing stays in contact with the crankshaft shoulder.

Repeat the operation on the other side.

Insert the bushing locking flanges into the conical bushings (1, fig. 79).

Apply a sufficiently long (35-40 mm) M16 screw to the M16 hole on the crankshaft and screw it in, until the flange is touching the bushing (1, fig. 80). Do not tighten the screw.



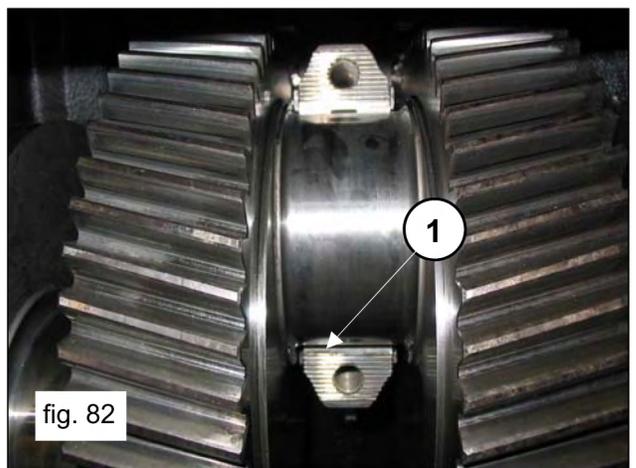
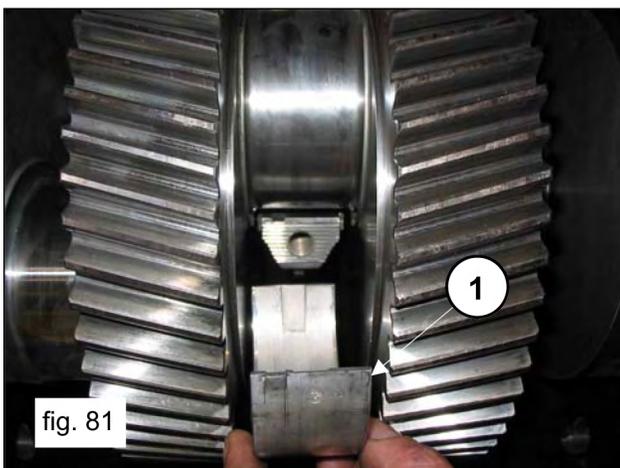
Repeat the operation on the other side.

Remove the device for locking the connecting rods (part #F27566200) (1, fig. 41).

Insert the upper half-bearings between the connecting rods and the crankshaft (1, fig. 81).



To correctly assemble the babbit bearings, make sure that the lug on the babbit bearing is positioned in the slot on the big end half (1, fig. 82).

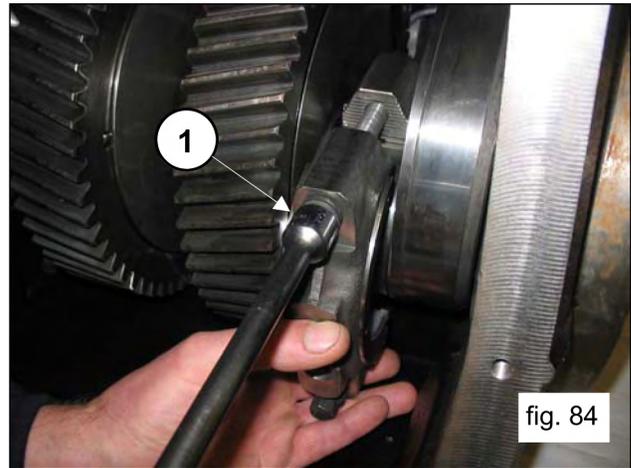
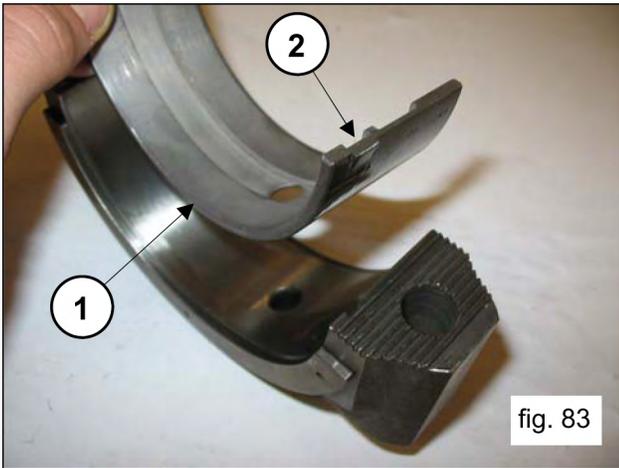


Apply the lower babbit bearings to the small ends (1, fig. 83), making sure that the lugs on the half-bearings are positioned in the slots on the small ends (1, fig. 83).

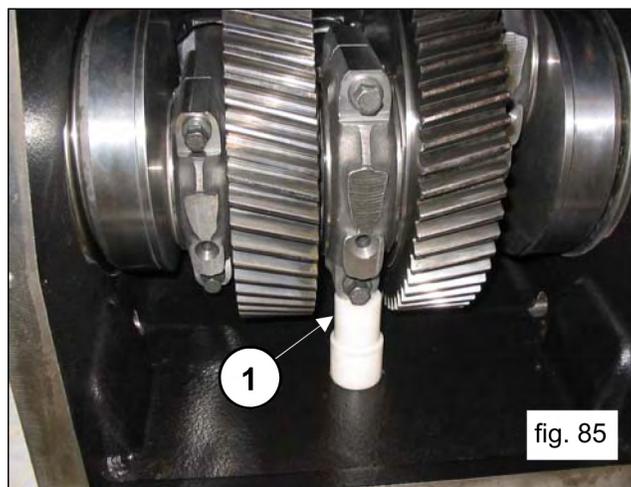
Attach the small ends to the big end halves using the M12 x 1.25 x 87 screws (1, fig. 84). Set the screws with a torque wrench, as shown in Section 3, at the same time bringing the screws to the tightening torque.



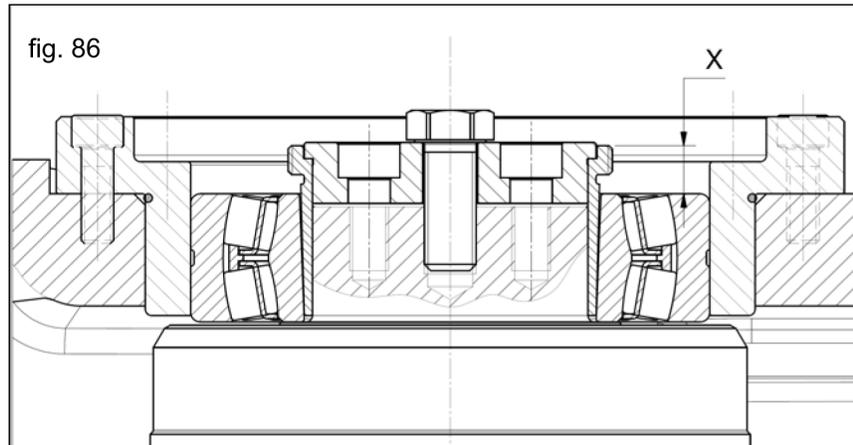
Be careful of the correct direction of assembly of the small ends. The numbering must face upwards.



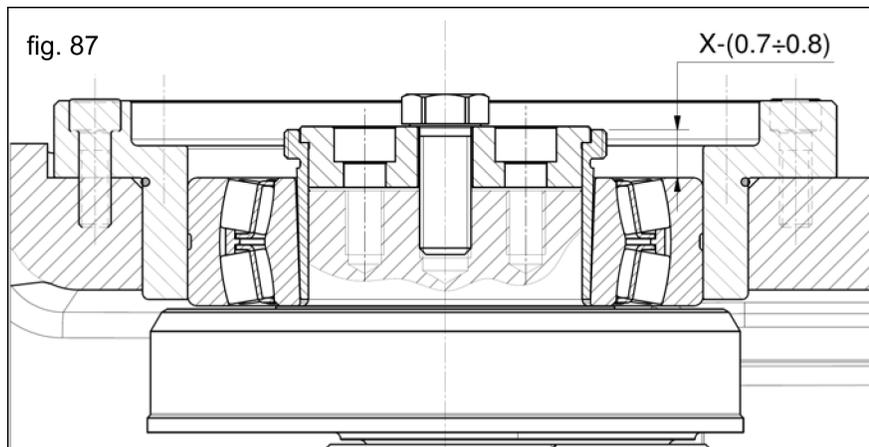
Insert a shim under the shank of the central connecting rod, to stop the rotation of the crankshaft (1, fig. 85).



Measure the distance X indicated in fig. 86 between the conical bushing and the crankshaft bearing.



Screw in the M16 screw until there is a reduction in the distance X of between 0.7 mm and 0.8 mm (fig. 87).

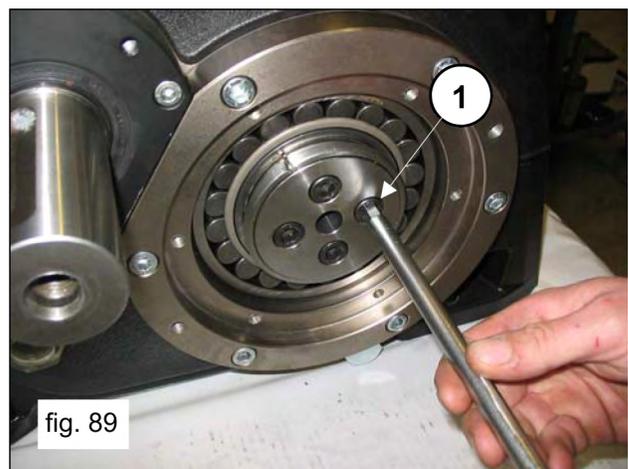
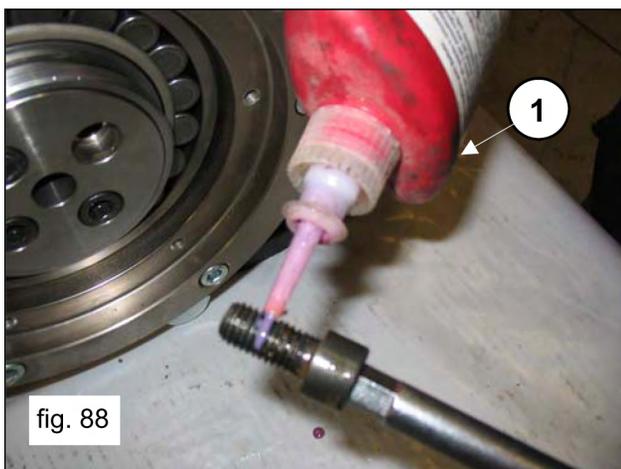


Repeat the operation on the other side.

Remove the M16 screw from the crankshaft. Screw the two bushing locking flanges onto the crankshaft using 4 M12 x 25 screws (1, fig. 89).

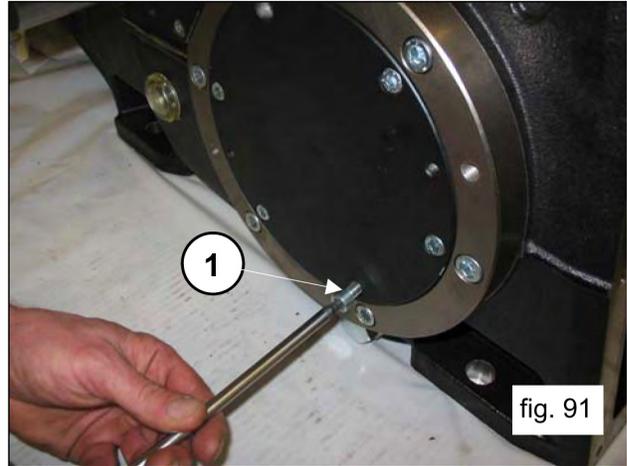
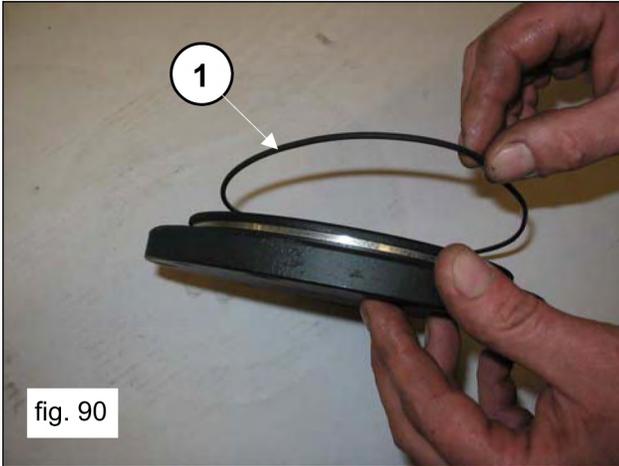
Apply LOCTITE 243 to the threads of the M12 x 25 screws (1, fig. 88).

Set the screws with a torque wrench, as shown in Section 3.

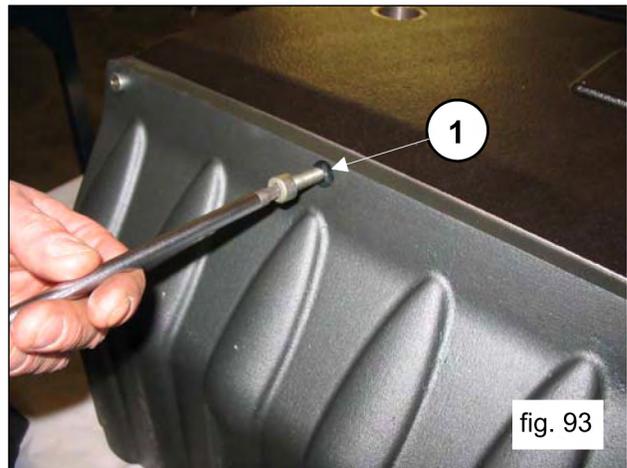
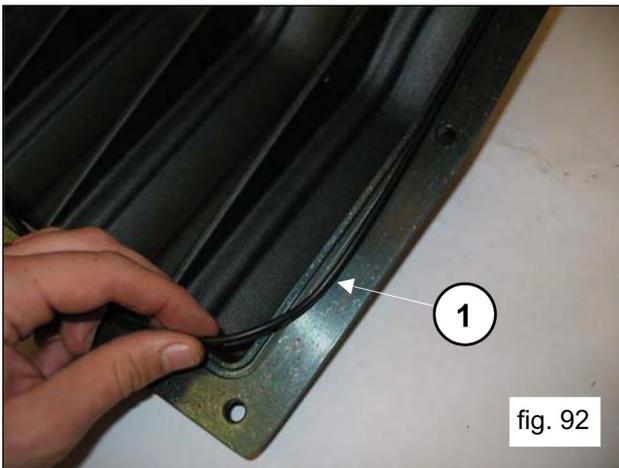


Remove the anti-rotation shim from under the shank of the central connecting rod.

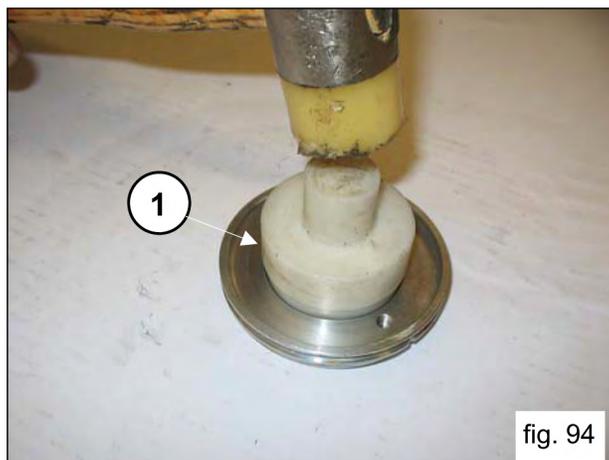
Mount the two bearing covers (with their O-rings) (1, fig. 90) using 6 M8x20 screws (1, fig. 91). Set the screws with a torque wrench, as shown in Section 3.



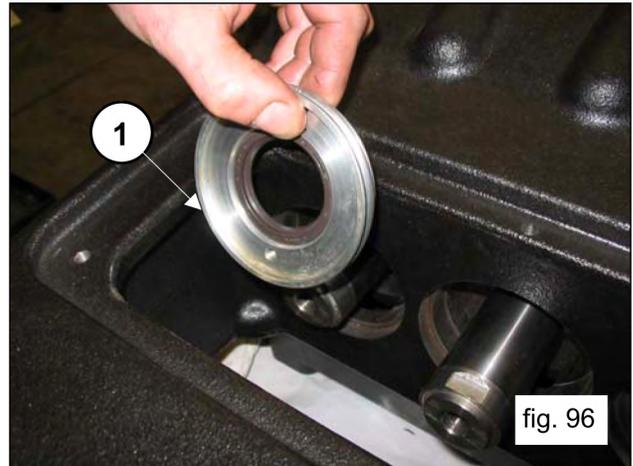
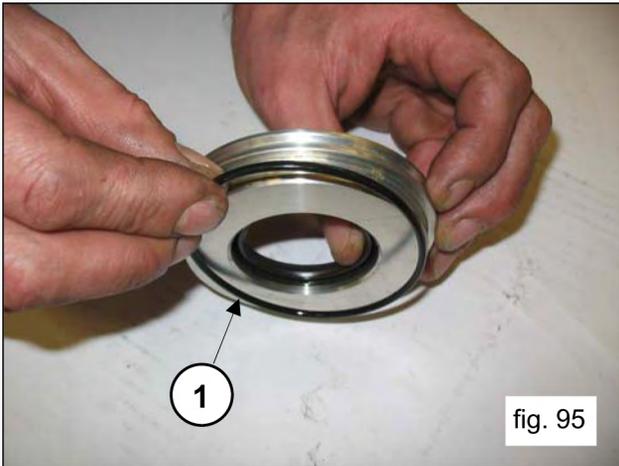
Insert the O-ring into the rear cover (1, fig. 92) and affix it to the casing using 10 M8 X 20 screws (1, fig. 93). Set the screws with a torque wrench, as shown in Section 3).



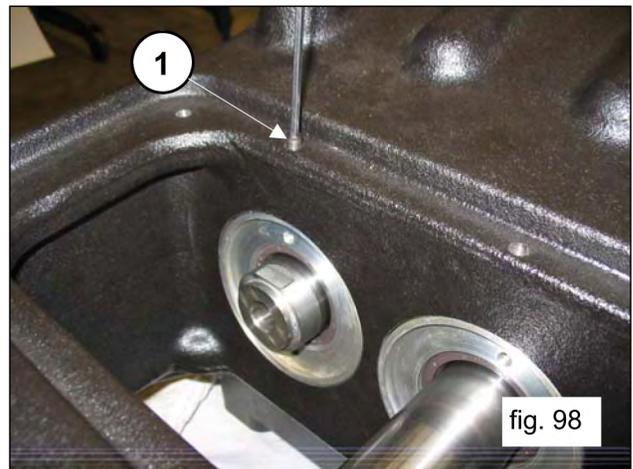
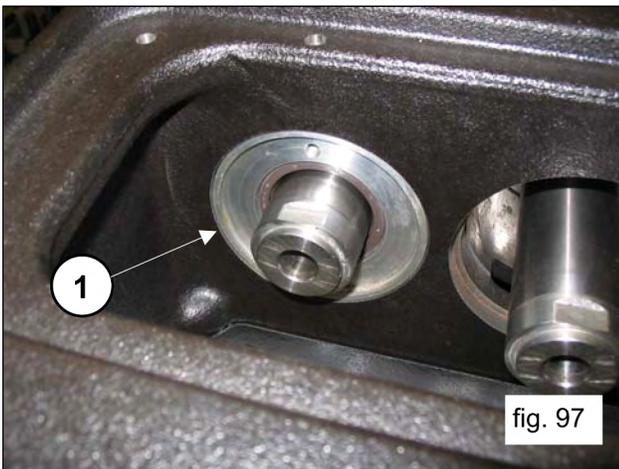
Mount the radial seal ring onto the oil seal cover (1, fig. 94) using a pad (part #F27910900).



Position the O-ring (1, fig 95) on the seat of the oil seal cover, and insert the assembly into the casing in the seat provided (1, fig. 96).

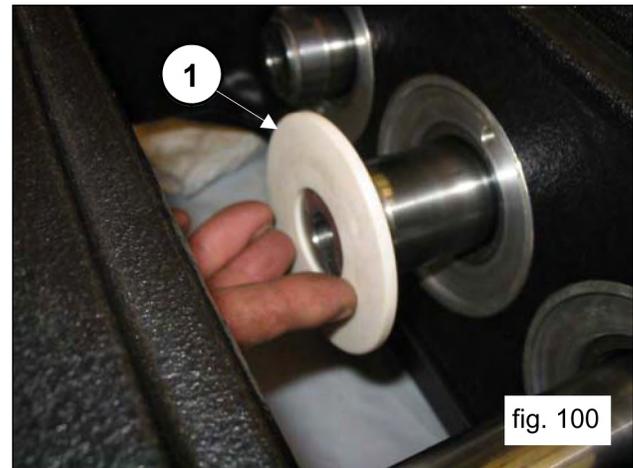
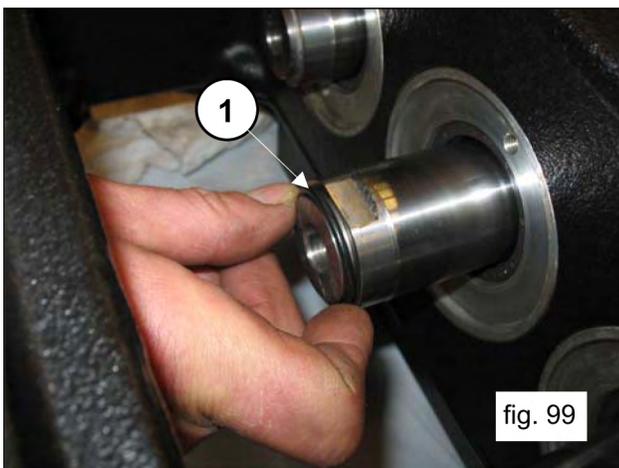


Make sure that the cover completely enters its seat (1, fig. 97), being careful not to damage the lip of the radial seal ring. Screw in the oil seal covers using 2 (M6 x 30 grub screws (1, fig. 98).

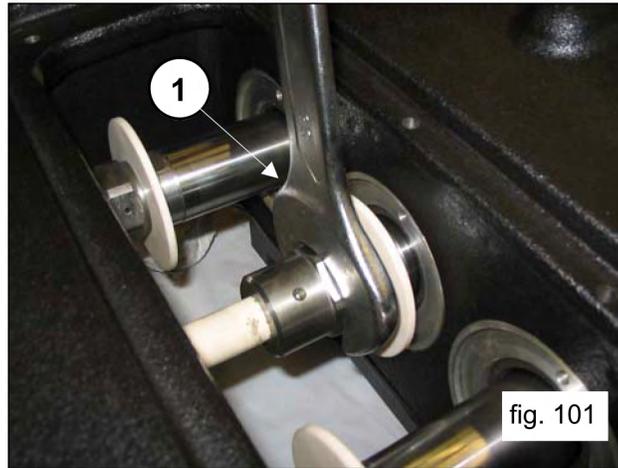


Set the screws with a torque wrench, as shown in Section 3.

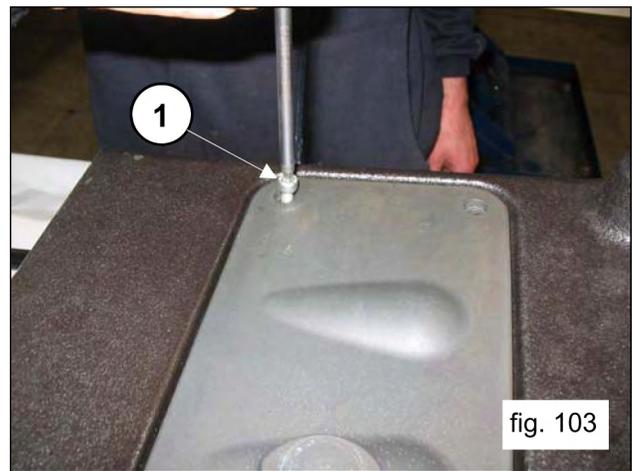
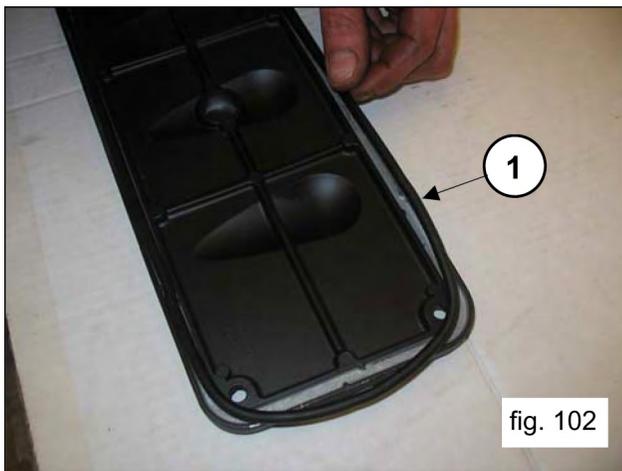
Position the spray-guard complete with O-ring in the seat on the piston head (1, fig. 99 and 100).



Screw in the three plungers (1, fig. 101) and set using an open-ended torque wrench as shown in Section 3).

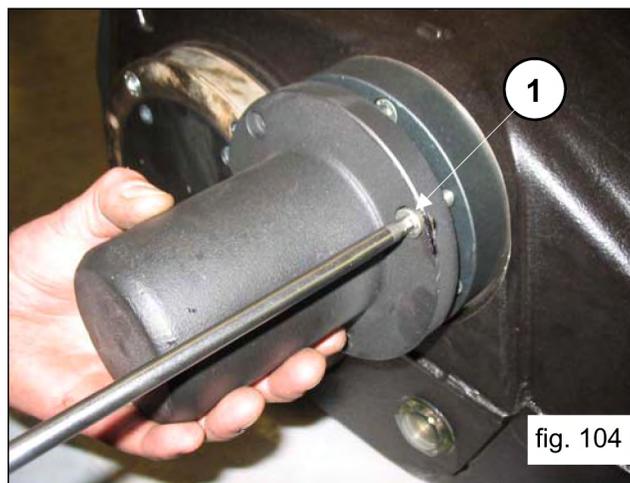


Insert the O-rings on the two inspection covers (1, fig. 102) and mount the covers using 4 M6 x 14 screws (1, fig. 103).

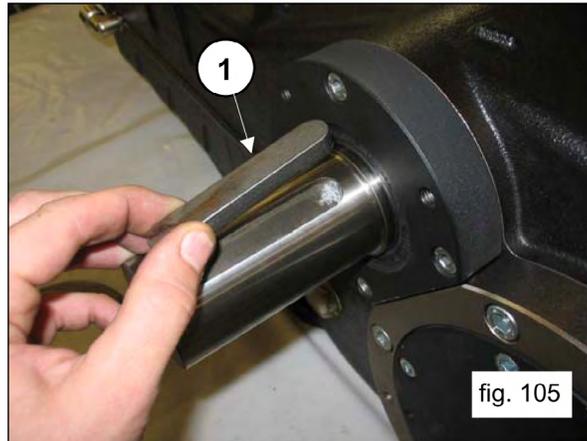


Set the screws with a torque wrench, as shown in Section 3.

Mount the shaft end cover and affix it to the casing using 3 M8 x 20 screws (1, fig. 104). Set the screws with a torque wrench, as shown in Section 3.



Apply the lug to the PTO shaft (1, fig. 105).



2.1.3 Increase and Reduction Classes

INCREASE TABLE FOR CRANKSHAFT AND CONNECTION ROD HALF-BEARINGS			
Recovery classes (mm)	P/N Half-bearing Upper	P/N Half-bearing Lower	Correction on the shaft pin diameter (mm)
0.25	F90931100	F90930100	Ø92.75 0/0.03 Ra 0.4 Rt 3.5
0.50	F90931200	F90930200	Ø92.50 0/0.032 Ra 0.4 Rt 3.5

INCREASE TABLE FOR PUMP CASING AND PLUNGER GUIDE		
Recovery classes (mm)	P/N Plunger Guide	Adjustments on the Pump Casing housing (mm)
1.00	F74050243	Ø81 H6 +0.022/0 Ra 0.8 Rt 6

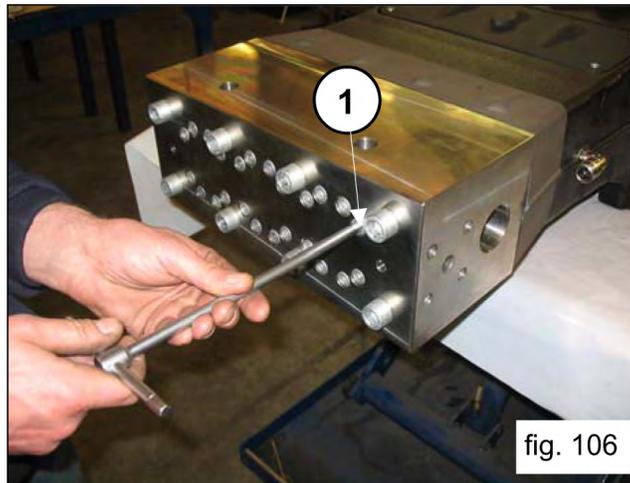
2.2 Repairing Hydraulic Parts

2.2.1 Dismantling the Head-Liners-Valves

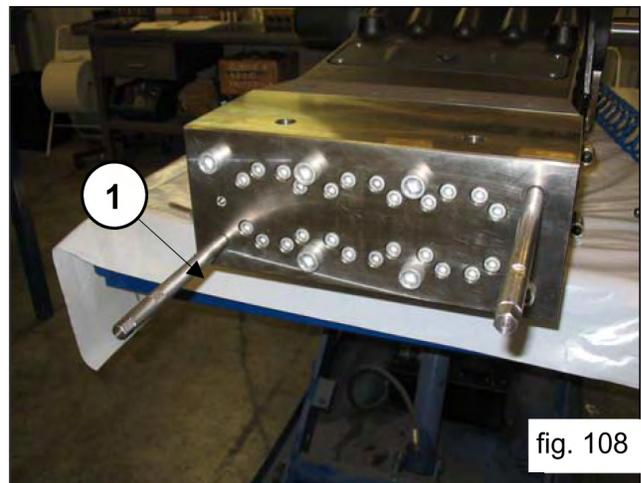
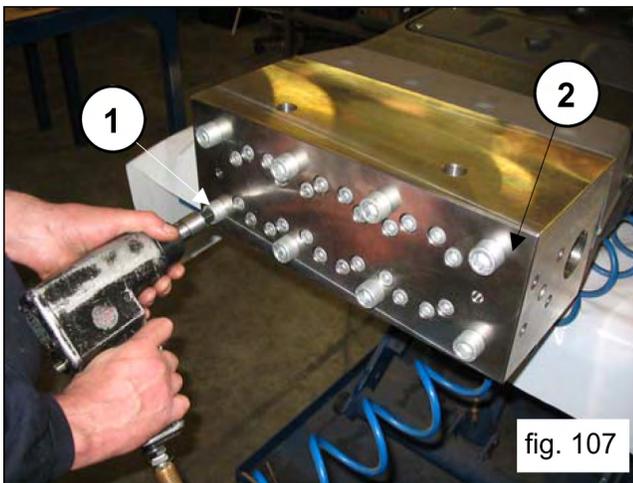
The head does not require periodic maintenance.

Operations are limited to inspection or replacement of the valves, when necessary. To extract the valve assemblies work as follows:

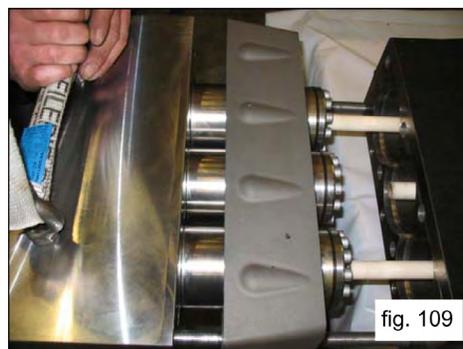
Loosen, without removing, the M10 x 140 screws affixing the liners to the head (1, fig. 106) to free them.



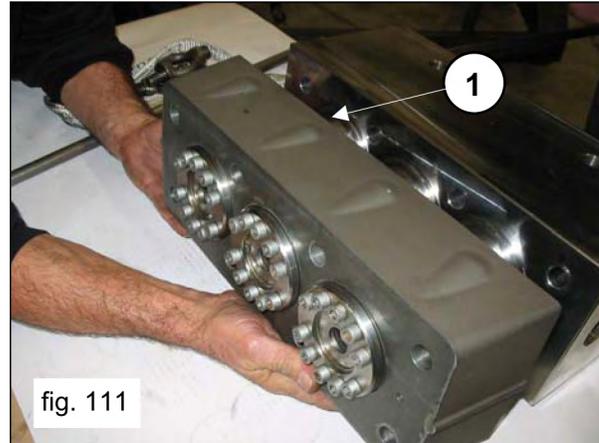
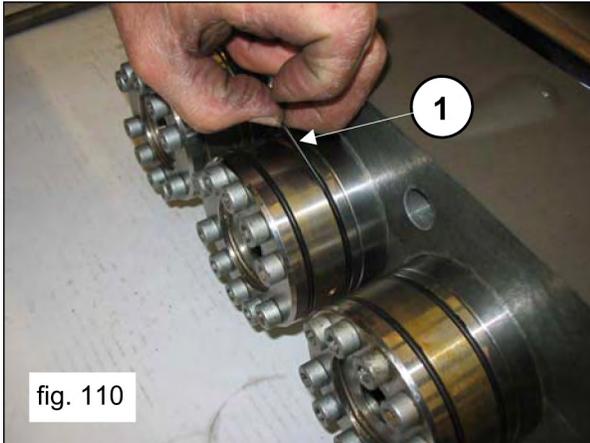
Unscrew two diametrically-opposite M16 x 280 head affixing screws (1 and 2, fig. 107) and replace them with two service pin-screws (part #F27540200)(1, fig. 108), and then proceed to remove the remaining screws.



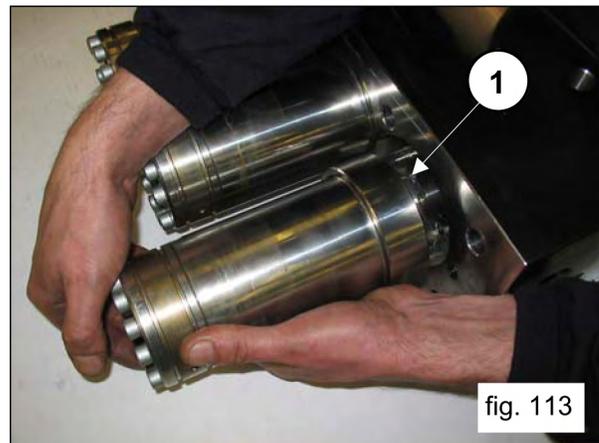
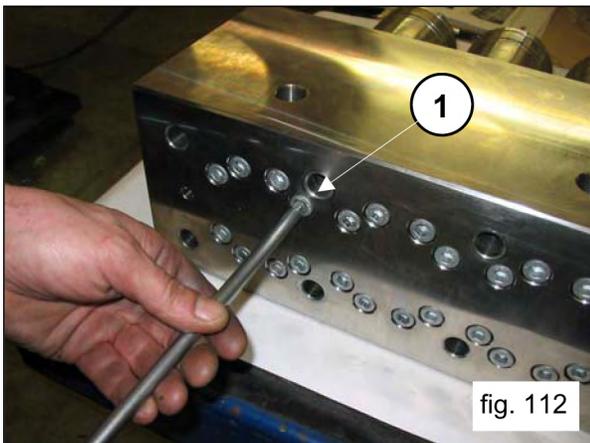
Separate the head and the spacer from the pump casing (1 fig. 109).



Remove the O-rings of the gasket supports (1, fig. 110) and slip off the spacer for liners from the liner assemblies (1, fig. 111).



Remove the M10 x 140 screws affixing the liners to the head (1, fig. 112) and take out the liner assemblies (1, fig. 113).

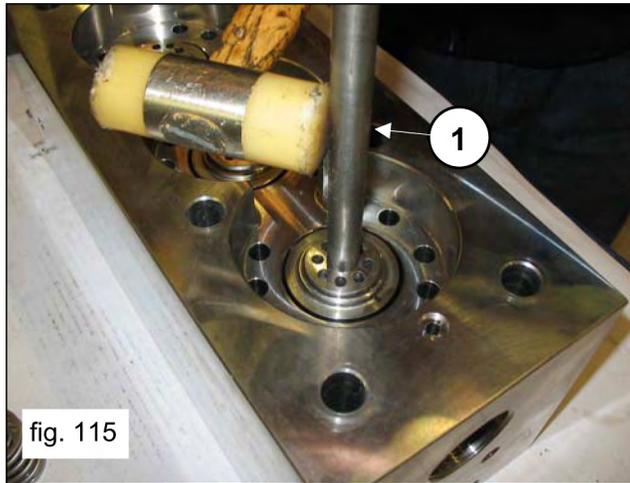


 **When removing the liners be careful not to lose the valve springs and their flat valves (1 and 2, fig. 114). Because they are only held in position by the surrounding parts, they could easily fall out.**

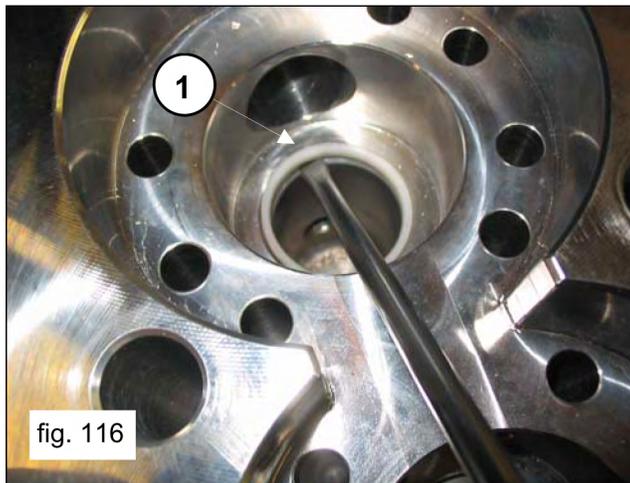




If the valve seats are stuck on the head due to the formation of limescale or oxide, they must be freed by inserting the special tool (part #034300020 for SKH20, SKH22, SKH24 or #034300010 for SKH26, SKH28, SKH30) into the outlet hole (1, fig. 115).

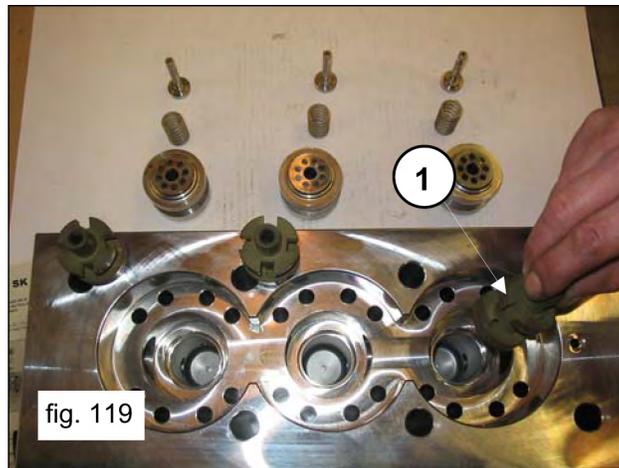
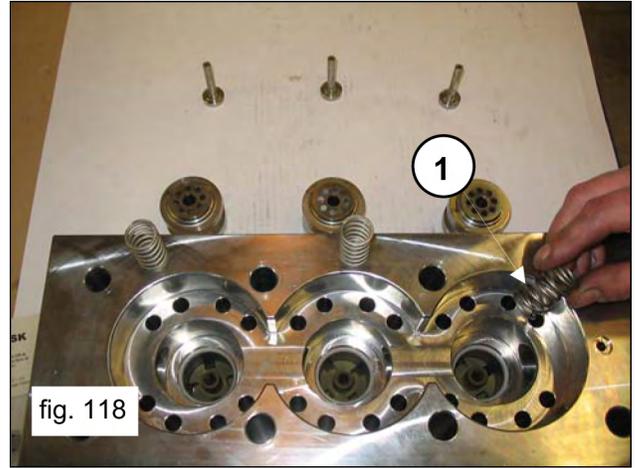
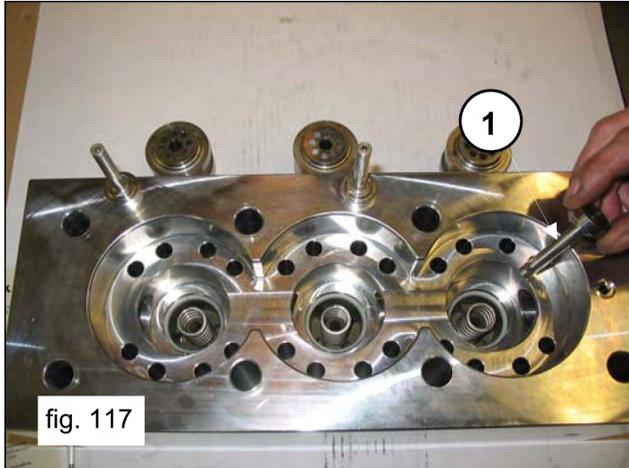


Take out the valve seats and check the state of wear of the gaskets. If necessary, replace them (1, fig. 116).



At each inspection of the valves, replace the seal rings and the frontal seal O-rings between liner and head, and between head and liner spacer in the recirculation hole area. Before reassembly clean and dry the various components and all their seats inside the head.

Take out the outlet cotters (1, fig. 117), and their holders (1, fig. 119) and the springs (1, fig. 118), check their state of wear and, if necessary, replace them. (Replace them in any case at the intervals specified in Section 11 of the Owner's Manual.)



2.2.2 Assembling the Head-Liners-Valves

To reassemble the various components, reverse the operations listed previously, paying particular attention to the correct assembly of the spacer for liners: the two as-cast discharges present on one of the two sides must be facing towards the lower part of the casing (the pump support side) after assembly.

Head-liners: proceed with assembly and setting of the head affixing screws and then proceed with setting the affixing screws for the liners.

For the tightening torque values and for the tightening sequence of the screws, follow the specifications given in Section 3.

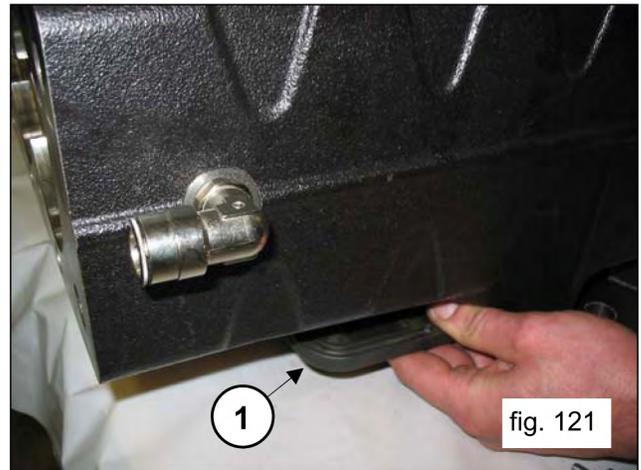
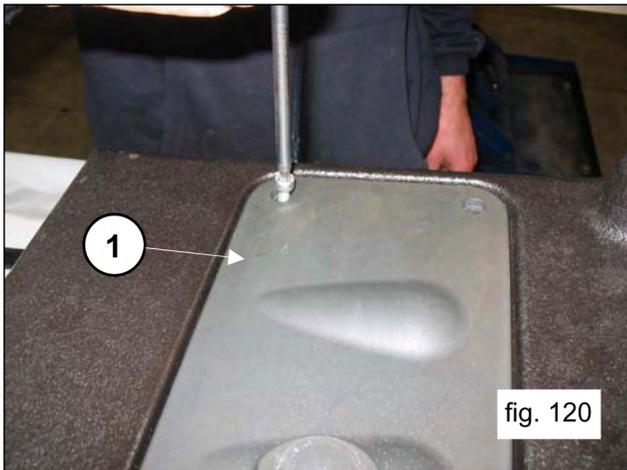
2.2.3 Dismantling the Piston-Supports-Seals Assembly

The piston assembly does not need periodic maintenance.

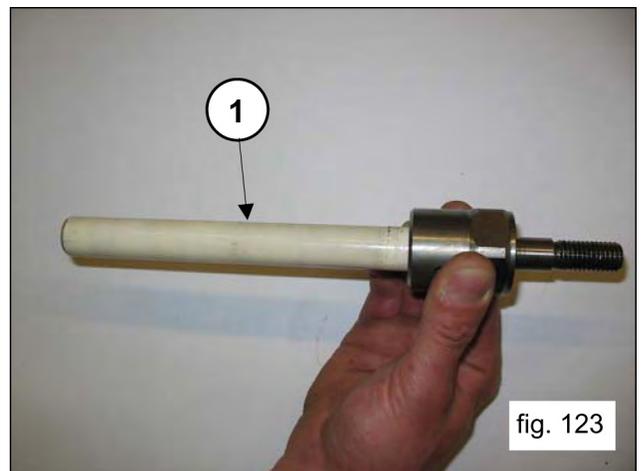
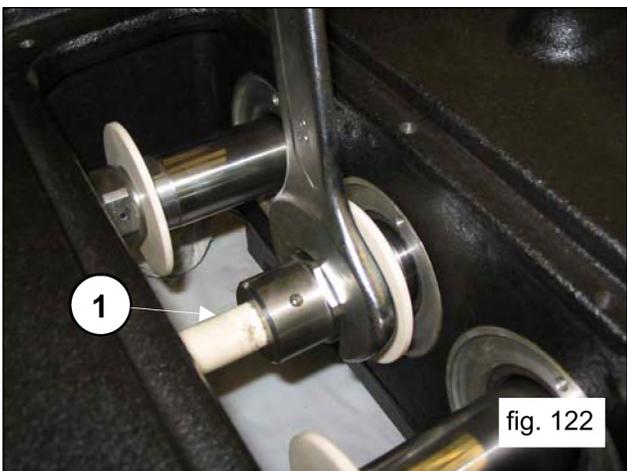
Operations are limited to a visual check of the draining of the cooling circuit. If there are anomalies/oscillations in the outlet pressure gauge, or pulsations in the cooling circuit drainage hose (if elastic), then the seal packing must be checked and, if necessary, replaced.

Separate the head and the spacer for liners from the pump casing as shown in 2.2.1 (from fig. 106 to fig. 113).

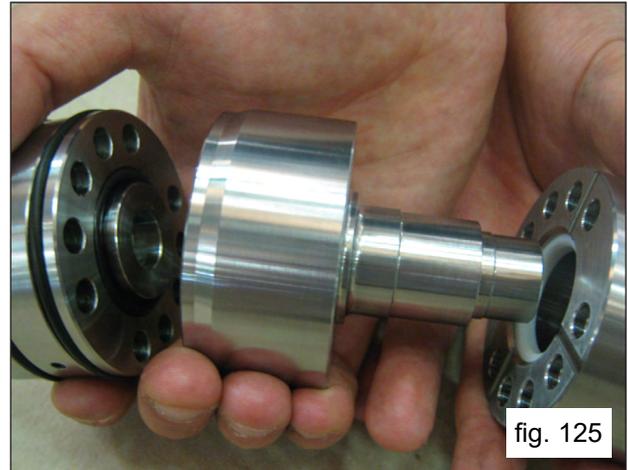
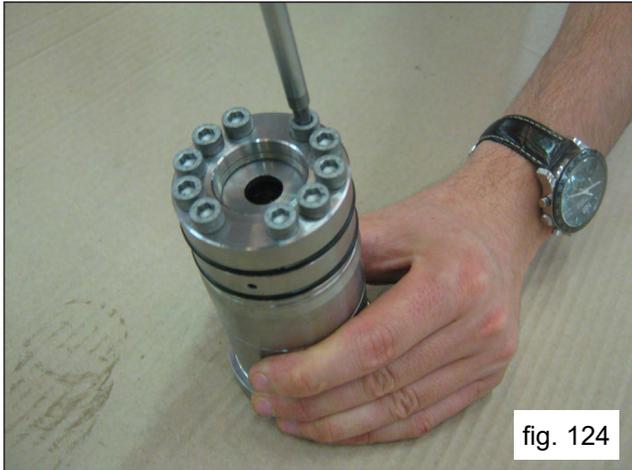
Remove the upper inspection cover (1, fig. 120) and the lower inspection cover (1, fig. 121) by unscrewing the 4 attachment screws. Slip off the O-rings and replace if necessary.



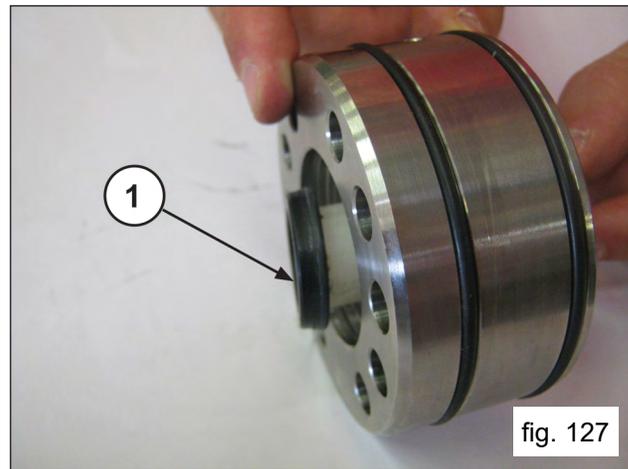
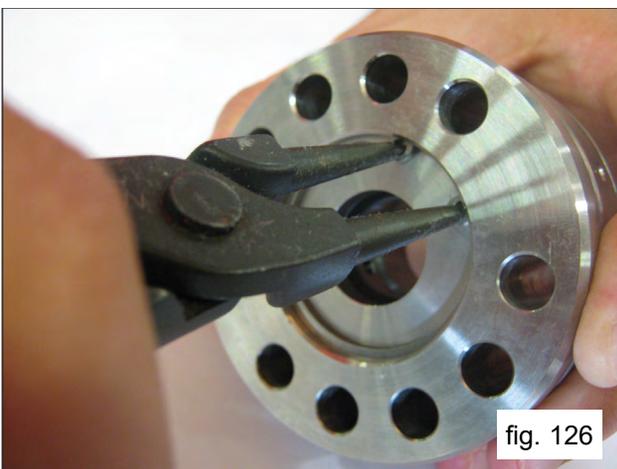
Remove the pumping elements with an open-ended wrench (1, fig. 122) and check their state of wear (1, fig. 123) Replace them if necessary.



Remove the M8x100 screws that fix the LP seals supports, HP seals support and liner as shown in Fig. 124, and proceed to the separation of all the components as indicated in fig. 125 and fig. 125/a.



Remove the Seeger ring and seal retainer fig. 126 and with a special plastic pin, take out the LP (low pressure) gasket seal (1, fig. 127).

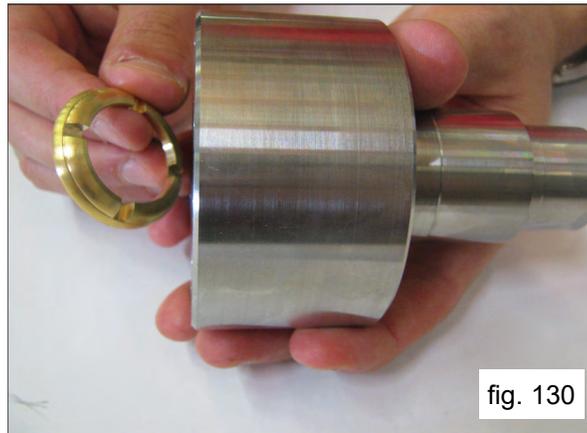
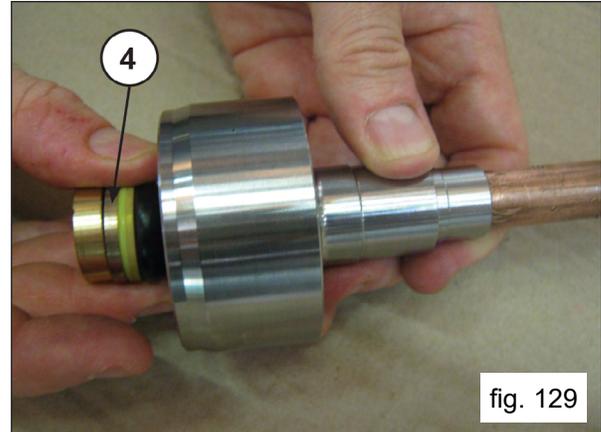
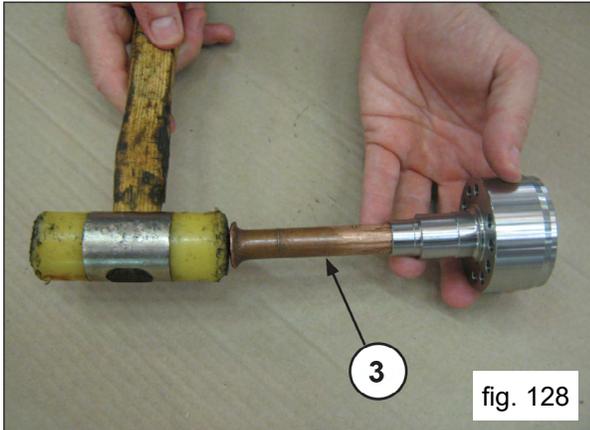


At every dismantling, the low pressure seals and the O-rings must be replaced.

With the liner separated from the seal support and with a special plastic pin (1, fig. 128) push out the HP (high pressure) packing (1, fig. 129).



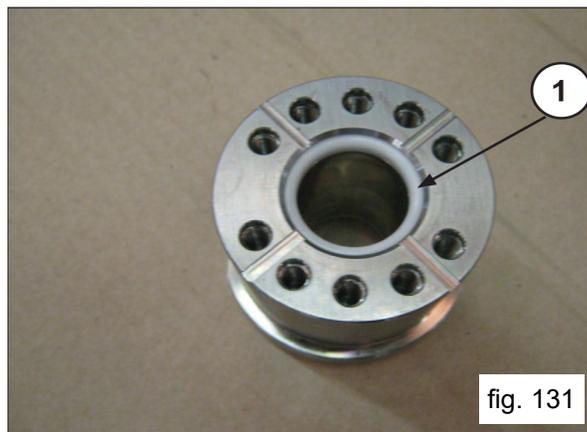
At every dismantling the HP packing (1, fig. 129) must be replaced.



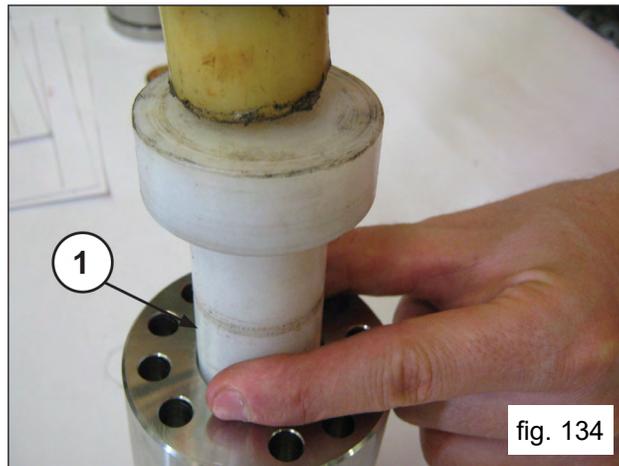
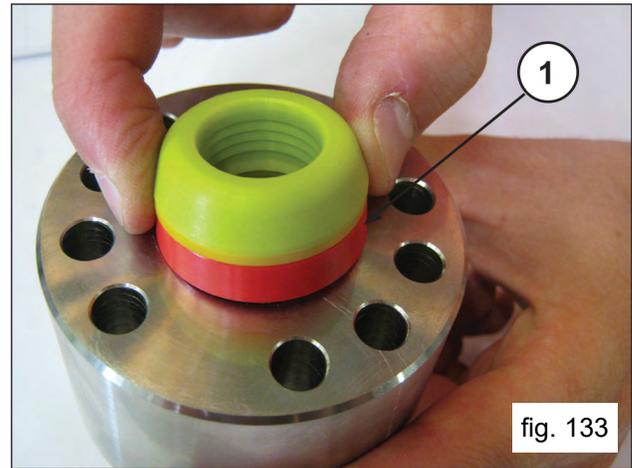
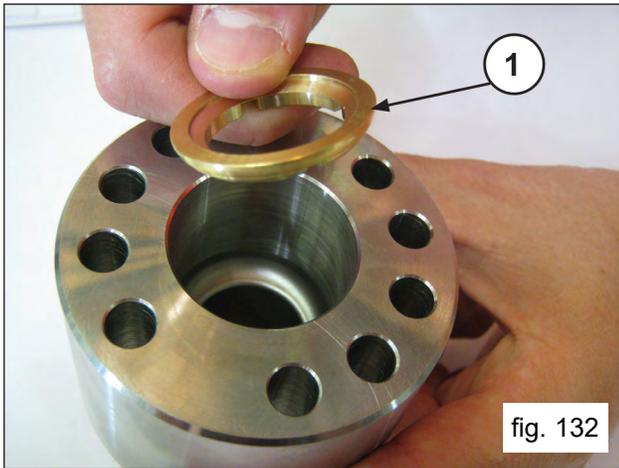
2.2.4 Assembling the Piston-Supports-Seals Assembly

To reassemble the various components, reverse the operations, paying particular attention to the sequence outlined below. For the tightening torque values and for the tightening sequence, follow the specifications given in Section 3.

Insert the seal into the liner.



Insert the HP (high pressure) seal support, the head ring (1, fig. 132) and then the HP (high pressure) packing; considering the slight interference between the seal and the H.P. seals support, to avoid damage we advise using a plastic pad (1, fig. 133 and fig. 134).

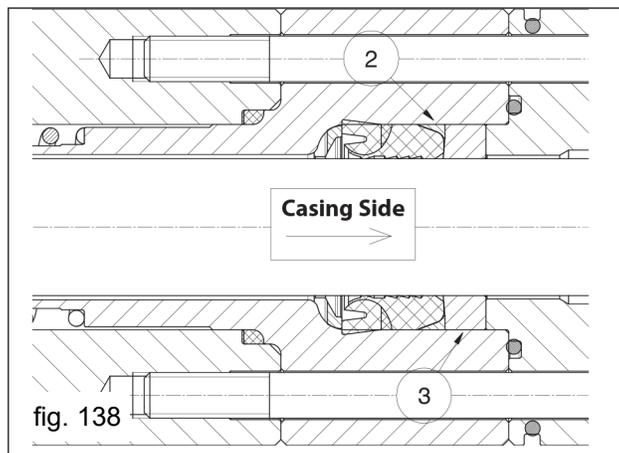
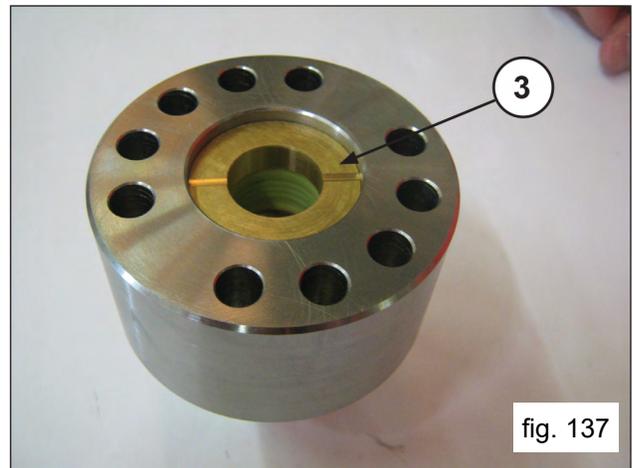
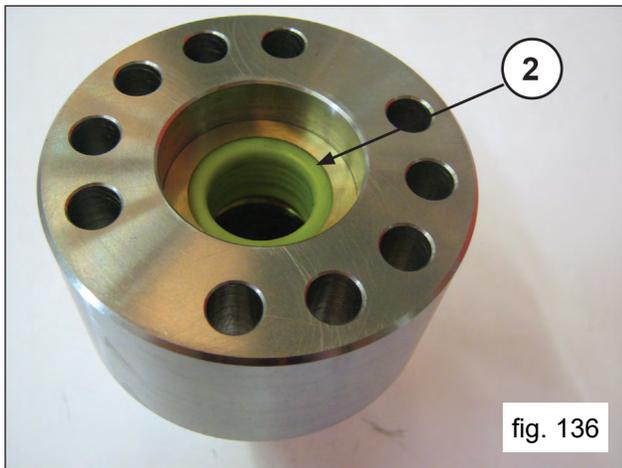
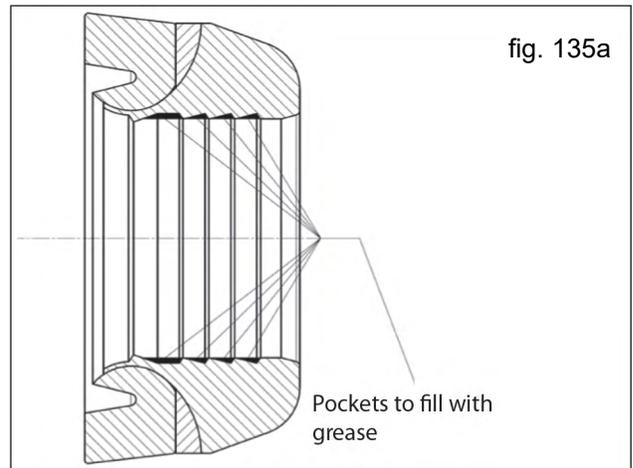
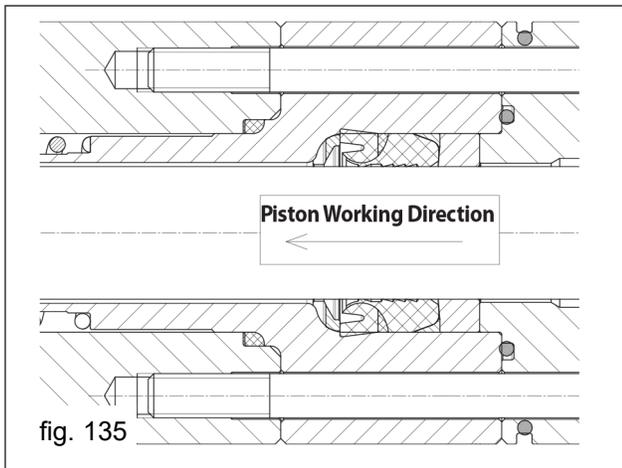


The HP seal must be inserted into the liner as shown in fig. 133 and 135.



Before inserting the HP seals, they must be lubricated with silicone grease (type OKS1110). following the instructions below:

- A.) The external diameter must be only lightly lubricated.
- B.) On the internal diameter the grease must be applied taking particular care to fill all the indentations between the seal lips, as shown in fig. 135a.



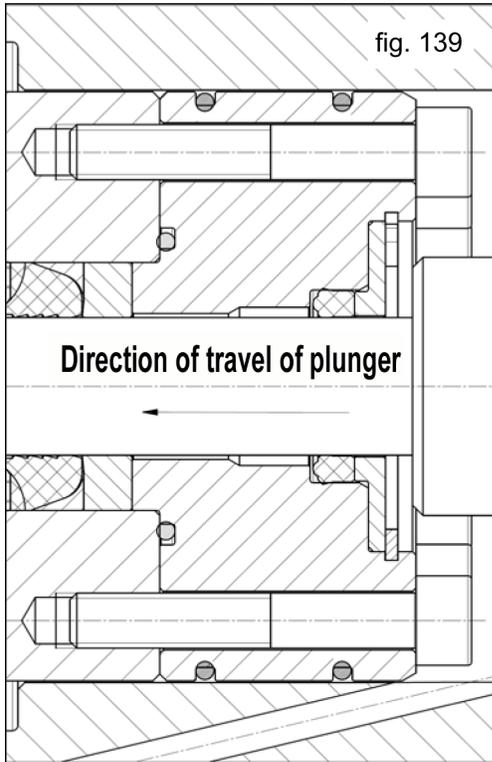
Insert the anti-extrusion ring 2 and gasket bushing 3 arranged as shown in fig. 136, fig. 137 and fig. 138



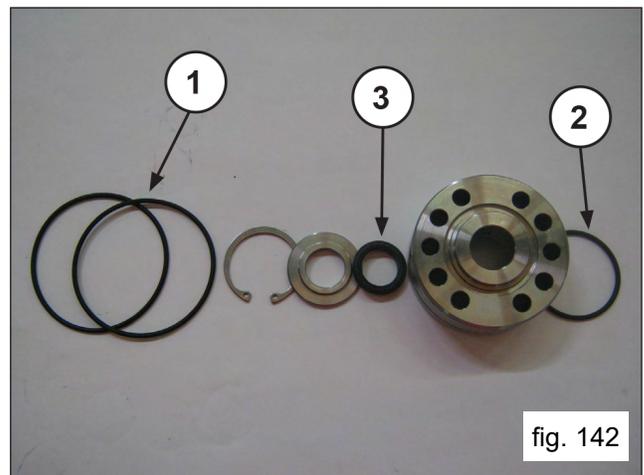
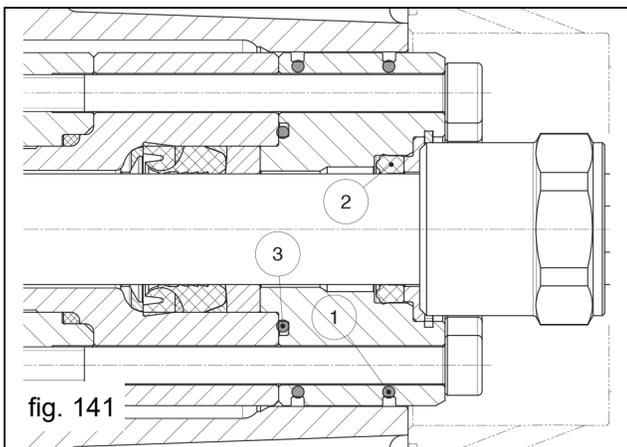
The gasket bushing 3 must be introduced into the support with the outlets facing outwards (casing side) as shown in fig. 137 and in fig. 138.



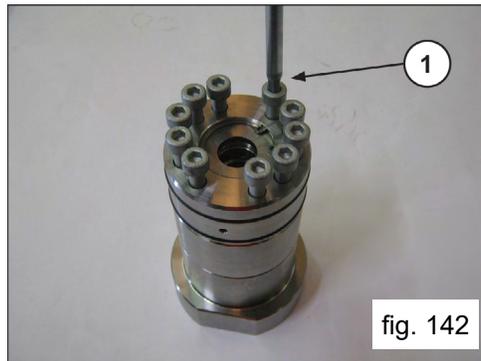
The LP seal must be inserted into the liner with the seal lip in the direction of travel of the plunger (fig. 139 and 1, fig. 140), lightly lubricating the outside diameter with silicone grease (OKS 1110 type). Replace the LP seal when it is worn.



Reassemble the seal support assembly (1, fig. 141 and 142), replacing the 1, 2 and 3 components).



Assemble the L.P. and H.P. seals support units. - liner unit by manually screwing the M8x100 screws as shown in fig. 143, then proceed with calibration using a torque wrench as indicated in chapter 3.



3. SCREW CALIBRATION

Screws are to be fastened exclusively using a torque wrench.

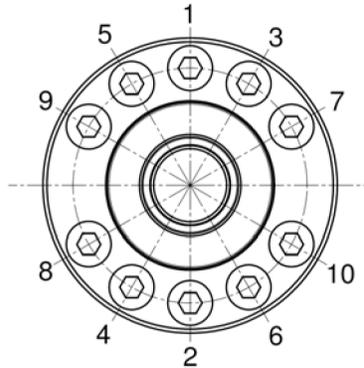
Description	Exploded View Position (From Owner's Manual)	Fastening Ft. Lbs.	Fastening Nm
M8x20 Screw	42	18.4	25
G1/2x13 Plug, Casing	66	29.5	40
M8x30 Screw, PTO Bearing Cover	85	18.4	25
M8x20 Screw, Shaft End Cover	42	18.4	25
M10x30 Screw, Bearing Support Cover	57	33	45
M6x14 Screw, Upper and Lower Covers	70	7.4	10
M8x20 Screw, Bearing Cover	42	18.4	25
M12x1.25x87 Screw, Connecting Rod Tightening	40	55.3****	75****
M10x35 Screw, Piston Head	37	44.3	60
M12x25 Screw, Bushing Locking Flange	51	50.5	68.5
Complete Plunger	16	37	50
Choke Fitting, D.3, 3/8M-3/8F	72	33	45
M8x50 Screw, Supports	26	29.5*	40*
M16x280 Screw, Head	14	245.6**	333**
M10x140 Screw, Liners	13	61.2***	83***



The screws in positions 13, 14 and 26 must be tightened with a torque wrench and the Threaded shaft must be lubricated with molybdenum bisulphide grease, part #F12001500

- * Screws for affixing supports must be tightened following the phases and order shown in the scheme in fig. 144
- ** Screws for affixing the head must be tightened following the phases and order shown in the scheme in fig. 145
- *** Screws for affixing liners must be tightened following the phases and order shown in the scheme in fig. 145
- **** Achieve coupling torque tightening screw at the same time

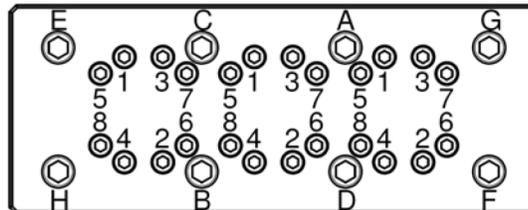
Tightening of screws for gasket supports, item 26.



Tighten M80x50 screws in the sequence indicated (1-2-3-4-5-6-7-8-9-10), performed in a single phase and with the specified torque.

fig. 144

Tightening of screws for head and screws for items 14 and 13



OPERATION 1: Tightening M16x280 screws (item 14) in two phases

Follow the sequence indicated in figure (A-B-C-D-E-F-G-H)

First Phase= 88.5 Ft.Lb. (120 Nm)

Second Phase= 147.5 Ft.Lb. (200 Nm)

OPERATION 1: Tightening M10x140 screws (item 13) in four phases

Follow the sequence indicated in figure (1-2-3-4-5-6-7-8)

First Phase= 30 Ft.Lb. (40 Nm)

Second Phase= 48 Ft.Lb. (65 Nm)

Third Phase= 61 Ft.Lb. (83 Nm)

Fourth Phase= 61 Ft.Lb. (83 Nm)

fig. 145

4. REPAIR TOOLS

Pump maintenance may be carried out using simple tools for assembling and disassembling components. The following tools are available:

For Assembly:

- Plunger Head Radial Seal Ring F27910900
- PTO shaft radial seal ring F27539500
- Head / liner spacer F27540200

For Disassembly:

- Valve Seat Removal Tool F034300020 (SKH20,22,24)
F034300010 (SKH26,28,30)
- Manifold Alignment Pins F27540200
- Shaft (for locking connecting rods). F27566200

5. MAINTENANCE LOG

HOURS & DATE

OIL CHANGE							
GREASE							
PACKING REPLACEMENT							
PLUNGER REPLACEMENT							
VALVE REPLACEMENT							



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